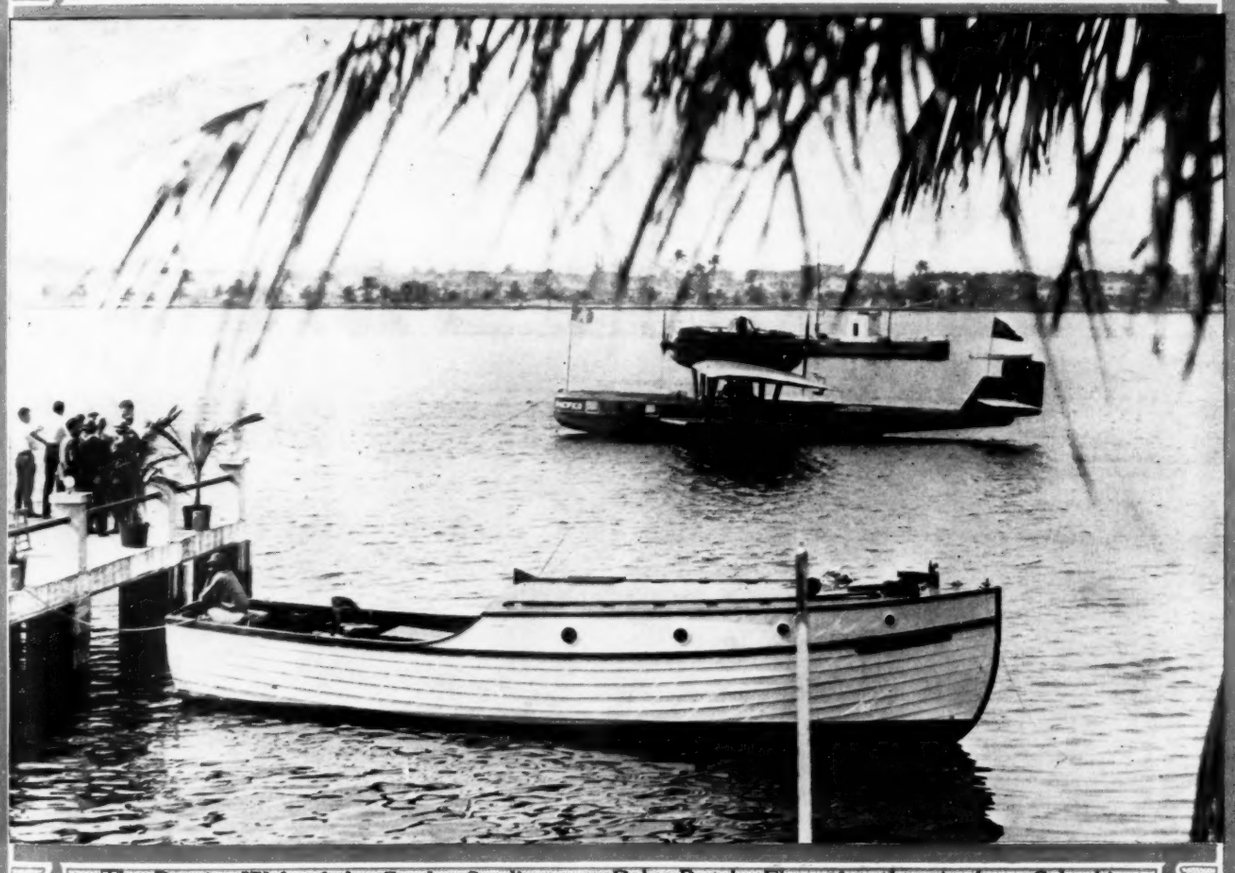
AVIATION

The Oldest American Aeronautical Magazine

JANUARY 25, 1926 Issued Weekly PRICE 15 CENTS



The Dornier Wal, of the Condor Syndicate, at Palm Beach, Fla., after the trip from Colombia.

Acme Photo.

VOLUME XX

NUMBER 4

SPECIAL FEATURES

WHAT PILOTS THINK ABOUT AIR LEGISLATION

BUHL-VERVILLE COMMERCIAL AIRPLANE

RADIO DIRECTION FINDING

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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Our course includes thorough flying training as well as complete instruction in the overhaul, care and maintenance of both the airplane and motor. The time within which one can learn to fly, varies with the individual; eight to ten hours of dual instruction, stretched over a period of ten days to two weeks should complete the most stubborn case, and from then on, the refinements of the art can be gained only from experience. Commercial aviation is a rapidly growing industry. Don't delay! Enroll now!

WRITE FOR BOOKLET.

ROBERTSON AIRCRAFT CORPORATION

ST. LOUIS FLYING FIELD, ANGLUM, MO.

JANUARY 25, 1926

AVIATION

VOL. XX. NO. 4

Published every Monday

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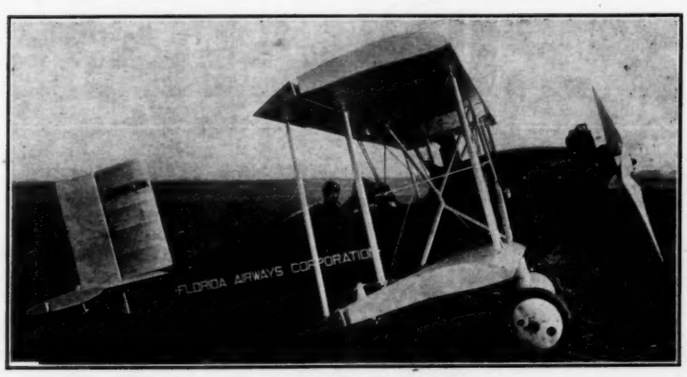
SCINTILLA

DEPENDABLE AIRCRAFT IGNITION



Major Reed Chambers, President of the Florida Airways Corp., recently made a 2,000 miles flight in this Curtiss Lark plane with Wright J4 200 hp. engine equipped with SCINTILLA Aircraft Magnetos. His report that this engine had practically no attention on this long flight is significant of the reliability of SCINTILLA Aircraft Magnetos, for, as Rear Admiral Wm. A. Moffett, Chief of the Bureau of Aeronautics, Navy Department, says in his annual report:

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RECENT aeronautical activities point to a rapid extension of commercial aviation during 1926.

The aeronautical industry is organized largely on the basis of governmental requirements and will, therefore, find great difficulty in producing both commercial planes and engines for spring delivery unless commitments are placed in the very near future.

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Now!

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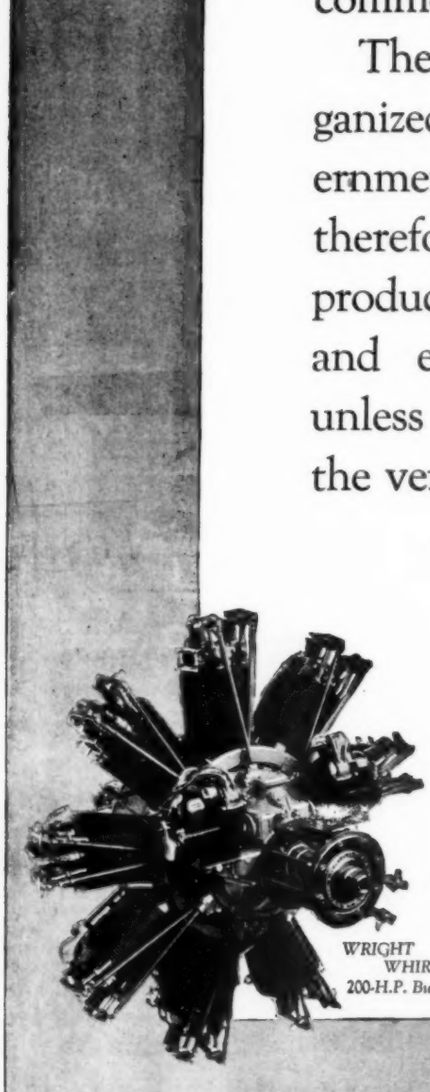
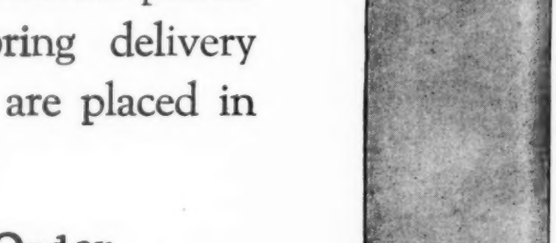


WRIGHT WHIRLWIND
200-H.P. Bulletin 8A



WRIGHT-BELLANCA, SIX SEATER
Bulletin 14A

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VOL. XX JANUARY 25, 1926 No. 4

The Guggenheim Aviation Fund

THE GIFT of $2,500,000 made by Daniel Guggenheim in the interests of aviation development in general and commercial aviation in particular is an act which can only be received with the warmest appreciation from the air fraternity as a whole. One of the most noteworthy features of the fund is the fact that it is not an endowment but an outright financial gift, the money itself to be allocated by a board of trustees to assist in the development of fields of aeronautics which warrent such financial assistance. The reason for this stipulation is significant. It is the opinion of Mr. Guggenheim that the next ten years will see aviation placed upon a sound and permanent basis, commercially and that there will, at that time, be no call for financial assistance. That the need for an endowment does not exist so much as the need for immediate financial assistance in this field.

Just what will be the directions in which the fund will be used will await the decision of a board of trustees. When thought is given to the possible lines in which such assistance may be applied, it is somewhat difficult to decide upon a policy which will bring out the greatest good in the interests of aviation. It seems also probable that Mr. Guggenheim himself was not decided on this point when making the gift. It has been said, however, that the facilities of the fund will be placed at the disposal of the government to assist in establishing, for commercial aeronautics, a basis of service comparable with that which the Government now provides for water navigation.

If this actually represents the proposals then it is probably the only point at which AVIATION finds itself at variance with the objects of the fund. It would seem to be the sole duty of the Government to provide for commercial aviation what it has long been ready to supply for ocean and coastwise navigation. Years of precedent would indicate that the provision of aerial searchlights, beacons, weather report service, etc., is the field of the Government and there is some reluctance in permitting any relief to be provided the Government in the carrying out of that which would seem to be its natural duty. Especially as there are so many other needed directions in which assistance could be provided. It is impossible to enumerate all of these but it is to be hoped that careful consideration will be given the many possibilities. The board of trustees for the fund will have a great responsibility on their hands in this connection.

The Usefulness of Airplane Records

EACH TIME that notices are published of new world airplane records being homologated by the Federation Aeronautique Internationale, the question is unconsciously raised as to the value of these records to the future of aeronautics. Whether or not these records are all that is to be desired in the interests of advancement of the science to the stage of its economic and strategic utility is a point frequently brought to mind. For example, while it is true that the design of the Pulitzer racers, which have held the world speed record for a number of years, has been the direct forerunner of what may well be considered the world's fastest, and therefore best, military pursuit plane, what effect has this design development had upon commercial aeronautics? It can hardly be with reason said that certain large commercial airliners of the present bear the characteristic marks of having been evolved from the designs of the record speed planes. It can, however, be said that certain of the smaller commercial designs bear the distinctive marks of, for instance, engine streamlining practice as carried out in the racing planes.

From this it may be gathered that, while straight speed records are a distinct advantage and of extreme value in airplane design, there is room for more specialized records which would tend rather toward the development of economic speed qualities in design as opposed to the speed-at-all-costs policy. There would seem to be room for an official record which recognizes speed but places a limitation upon certain other features. For instance, engine size, load carrying capacity, and, in fact, airplane dimensions might be limited in certain speed classes and individual speed records recognized for such classes. This would have the result of encouraging and developing an economical speed airplane. Since speed, in itself, is determined by the ratio of wing area to engine power, this factor might be made the governing one in the formulation of such a new class of record as the one suggested. In some respects the National Air Races held every year, provide for this class of record but the races are, in effect, if not in original intent, only national, not being participated in by any other country but America, and cannot, therefore, be said to have a marked influence upon international advancement in design as do world records.

On the other hand the altitude record, in its present form, has a direct and extremely important effect upon all classes of aeronautic design, both military and commercial. From the standpoint of military observation, with the possibility of aerial photography from altitudes of over 30,000 ft., the value of high altitude planes is obvious. There is, however, one point which is frequently overlooked. It is not always realized that an airplane which is controllable and able to maintain level flight at extremely high altitudes will be more controllable and in better equilibrium at lower altitudes. Thus, indirectly, the endeavors being put into producing a design able to reach ever higher altitudes, are, in fact, providing design knowledge which can with advantage be applied to the design of better commercial planes for normal altitudes.

Daniel Guggenheim Gives $2,500,000 to Foster Aviation

Board of Trustees to be Unhampered in Its Disposal

DANIEL Guggenheim announced Jan. 17, in a letter to Secretary of Commerce Hoover that he had set aside $500,000, and stood ready to supply an additional $2,000,000 as the Daniel Guggenheim Fund for the Promotion of Aeronautics, to foster the science of aircraft until flying freight and passenger services can be placed on a self-supporting basis.

Mr. Guggenheim predicted that flying would establish itself as an independent industry within about ten years. At the end of this period of development Mr. Guggenheim intends that the fund shall terminate its existence. During this period his trustees are free to spend principal as well as interest to promote aircraft development.

Last summer Mr. Guggenheim gave $500,000 to establish a school for aeronautics at New York University. The incorporation papers of his new foundation were filed at Albany last week. The trustees have not yet been named.

Mr. Guggenheim's Letter

Mr. Guggenheim's letter to Secretary Hoover follows:

Jan. 16, 1926.

Hon. Herbert Hoover, Secretary of Commerce,
Washington, D.C.

My Dear Mr. Secretary:

Under your general direction the United States Government has made substantial progress in the promotion of civil aviation. I am venturing to advise you, therefore, by this letter, of my purpose to establish a fund which will cooperate with you and with all agencies of the Government and the public generally in advancing the art and science of aeronautics and aviation.

This action is taken particularly in view of the very wise endorsement by the President of the United States of the recommendation by the National Advisory Committee for Aeronautics that a Bureau of Air Navigation be established in the Department of Comerce. President Coolidge stated that:

"The outstanding weakness in the industrial situation as it affects national defense is the inadequacy of facilities to supply air service needs. The airplane industry in this country at the present time is dependent almost entirely upon governmental business."

Factors Favoring Aircraft

The Department of Commerce, in studying the need for commercial aviation, reported:

"There are indications of a great change in the last few months which has given an impetus to plans for developing American civil aeronautics that is bound to produce permanent results. The extent of our country, its physical characteristics and its intimate contact with Canada, Mexico and the West Indies are such as to make air service highly desirable. The success of the transcontinental air mail operated by the Postoffice Department and the general approval which has greeted its operations indicate that the choice of a method for developing civil aeronautics in the United States is the question demanding immediate solution. There is every reason to hope that before the end of the present year, civil aviation in the United States will have taken a long step forward toward a position of permanent security."

You, yourself, have pointed out that a Government public service must be provided to cooperate with aviation in a manner comparable to the cooperation our Government now gives to shipping, and you have very properly pointed out that without such service "aviation can only develop in a primitive way." There is undoubtedly a function in this situation which the Government alone can perform.

Quotes President's Board

I have also been much impressed by the question raised and the answer given in the report of the President's Aircraft Board, which, as of Nov. 30, 1925, said:

"How can the civilian use of aircraft be promoted? This * * * may well be the most important question which aviation presents in its far-reaching consequences to our people.

Wide World Photo

Daniel Guggenheim

"A great opportunity lies before the United States. We have natural resources, industrial organizations and long distances free from customs barriers. We may, if we will, take the lead in the world in extending civil aviation."

Such considerations as the foregoing have convinced me that there is a function which can only be performed by private enterprise aside from the proper function of the Government. So much remains to be done before civil aviation can realize the possibilities before it that everyone must recognize that there intervenes a period of necessary study and experimentation.

In these circumstances I have decided to establish the Daniel Guggenheim Fund for the Promotion of aeronautics and to place at its disposal the sum of $2,500,000. The fund will be administered by a board of trustees composed of men of eminence and competence.

Terms of Gift

I shall place the sum of $500,000 immediately in the hands of the trustees to defray the expense of their studies and any work they may decide immediately to undertake. In addition, I will hold myself in readiness to supply any additional sums up to a total of a further $2,000,000, as and when the judgment of the trus-

tees may indicate that the money can be used wisely to promote the aims of the fund. The trustees will have unrestricted power to do anything which, in their judgment, may develop aeronautics, the only condition being that the fund shall not be a profit-making enterprise. Any earnings the fund may realize from its efforts will go back into the fund to carry on the work for which it was created.

The trustees are to have power to spend the principal sum thus contributed, and there is no purpose to establish a permanent foundation. The thought is, rather, that the whole art and science of aeronautics and aviation being now in its infancy, it will be possible, with the sums thus contributed, to bring about such an advance in the art that private enterprise will find it practicable and profitable to "carry on" and thus render a continuous and permanent endowment for this purpose unnecessary.

To Make America Leader

You will perhaps recall that last year I established a School of Aeronautics at New York University, my desire in making that gift being more quickly to realize for humanity the ultimate possibilities o faerial navigation, and to give America the place in the air to which her inventive genius entitles her. This school is already making gratifying progress and the studies that have been made in connection with it have indicated clearly the enormous field of opportunity which unfolds itself to the development of air transportation. The establishment of additional schools such as that at New York University may well be warranted in the near future.

Among the most important objects which I would now like to see accomplished at the earliest possible moment is the development of opportunities for new fields of employment of American young men. My family, as you know, has long been identified with exploration beneath the earth. We have tried to assist in development which would make mining more safe as well as more profitable, and therefore of the greatest economic value. Not the least desirable results which have followed from this effort have been the opportunities for the profitable employment of able engineers and workmen generally. My hopes, therefore, are that, through the impetus which the Daniel Guggenheim Fund for the Promotion of Aeronautics will give, attractive opportunities for men to work and serve in the air may develop far more rapidly than would otherwise be the case.

The general purposes to which I trust the new fund will devote itself may be broadly defined as follows:

1. To promote aeronautical education in both institutions of learning and among the general public.
2. To assist in the extension of fundamental aeronautical science.
3. To assist in the development of commercial aircraft and aircraft equipment.
4. To further the application of aircraft in business industry and other economic and social activities of the nation.

I am hopeful without desiring in any sense to restrict their own freedom of judgment, that the trustees of the fund will govern themselves as far as possible by the following principles:

1. Restrict the work to civil activities.
2. Avoid duplication of effort with other aeronautical organizations.
3. Avoid work which is properly a government function.
4. Plan to work carefully, to concentrate effort and to carry any investigation or project through to a definite conclusion.
5. Maintain a simple, inexpensive organization, depending on outside agencies, wherever possible, to carry out the aims of the fund.

I have confidence that the fund can serve an important purpose. Recent events in the United States have stimulated much discussion of aviation. The time is ripe for action. There is urgent need in our country for immediate practical and substantial assistance to aviation in its commercial, industrial and scientific aspects. No less urgent is the need to awaken the American public, especially our business men, to the advantages and possibilities of commercial aircraft—in a word, to make the American public in a very real sense "air wise."

In closing, sir, may I express my delight at the intelligent and constructive interest you yourself are manifesting in the development of aeronautics as one of the most important new agencies of civilization? In making my deed of gift to the trustees of this fund, I shall accordingly request that the trustees cooperate with your department in every possible manner.

DANIEL GUGGENHEIM

Ten leaders in aviation, engineering law and finance have accepted positions yesterday as directors of the Daniel Guggenheim Fund for the Promotion of Aeronautics. The ten men, who will administer the fund, are:

Rear Admiral H. I. Cone, U. S. N., retired, former commander of the United States Naval Aviation Forces, Foreign Service.

F. Trubee Davison, chairman of the National Crimes Commission and in naval aviation during the World War.

Dr. William P. Durand, member of the National Advisory Committee for Aeronautics and professor of mechanical engineering at Stanford University.

General George W. Goethals, chief engineer of the Panama Canal.

Harry F. Guggenheim, formerly United States naval aviator overseas.

Professor A. A. Michaelson, head of the department of physics at the University of Chicago and winner of the Nobel prize in physics, 1907.

Dwight W. Morrow, chairman of the President's aircraft board of inquiry and member of J. P. Morgan & Co.

Elihu Root Jr., lawyer.

John D. Ryan, director of aircraft production and second Assistant Secretary of War and director of air service, 1918.

Orville Wright, brother of Wilbur Wright and first to fly a heavier-than-air machine, now director of the Wright Aeronautical Laboratory.

Aeronautical Publications Available

The Information Division, Office of the Chief of Air Service, Washington, D.C., announces that there are on hand a limited number of books and drawings on aeronautical subjects and that these are available for distribution upon application. While much of this material is elementary and, in a measure, obsolete, it should prove of interest and value to boys and other primary students of aviation.

Applications to receive these publications will be handled in the order in which they arrive and not more than one copy of any one publication will be sent to any individual. Furthermore, the Chief of Air Service reserves the right to limit and control the distribution and to make substitutions as he may deem appropriate.

The list of available publications is appended herewith:

BOOKS:

"The Aeroplane Speaks",—an elementary book on airplanes by H. Barber, Captain, Royal Flying Corps, published in 1917.

"Military Airplanes",—an elementary work on airplanes and aerodynamics, by Grover C. Loening, fourth edition, published in 1917.

"Military Airplanes",—same as above, 1918 edition.

"Standard Aircraft Corporation, J-1 Military Training Machine",—a handbook of assembly specifictions published in 1918.

"The Curtiss Stndard JN4-D Military Tractor",—a handbook of instructions published in 1918.

"The Curtiss Standard OX Aeronautical Motor",—a handbook of instructions published in 1918.

"The Curtiss Standard OX5 Aeronautical Motor Parts List",—published in 1917.

"Municipal Landing Fields and Airports",—by George S. Wheat, published in 1920.

"Handbook of Instructions for Airplane Designers",—Second and Third Editions, published by the Enginering Division of the U. S. Army Air Service in Feb. 1921 and in June, 1922, respectively.

DRAWINGS:

VE-7 Airplane, a two passenger biplane,—assembly drawings in sets of 4 sheets each, 30 x 40 inches.

A sheet showing silhouettes of a number of typical German planes used during the war; to instruct aviators and ground troops in the identification of hostile aircraft.

Two color plate, 18 x 20 inches, showing oiling system of Hispano-Suiza Engine.

Estimated Cost of the Air Service of the United States For Six Years

Including the Army, Navy, Post Office, and the National Advisory Committee for Aeronautics Fiscal Years 1920-1925 Inclusive

1. ARMY.	*1925*	*1924*	*1923*	*1922*	*1921*	*1920*	*TOTAL*
Expenditures from direct appropriations to Air Service, including salaries, O.C.A.S.	$14,378,511.02	$13,263,497.63‡	$12,867,306.56‖	$18,055,023.23¶	$ 32,332,907.07¶	$ 25,882,153.27¶	$116,779,398.78
Expenditures from indirect appropriations.							
Signal Corps	$ 236,000.00	$ 530,575.00	$ 162,000.00	$ 825,000.00	$ 160,000.00	$ 250,000.00	
Medical Department	64,244.11	69,957.79	89,261.27	64,386.77	73,153.82	90,448.49	
Ordnance Department	737,000.00	508,390.00	667,854.00	681,230.00	599,593.00	892,647.00	
Chemical Warfare Service	15,934.95	19,461.86	8,604.00	4,061.02	3,720.74	161.40	
Quartermaster Corps	4,145,315.00	4,477,281.00*	4,075,654.66*	3,459,336.67*	5,192,359.63*	8,886,226.86*	
Corps of Engineers	11,452.62	6,501.83	60,978.75	25,651.08	——	——	
Pay of Army	9,335,943.00	8,272,720.15	7,985,424.60	9,380,905.40	8,705,331.60	9,156,264.00	
Mileage of the Army	41,000.00	43,106.00	34,382.08	48,337.00	75,251.00	174,737.00	
Total	$14,586,869.68‖‖	$13,927,993.63‡	$13,084,159.36‖	$14,488,907.94¶	$ 14,809,409.79¶	$ 19,450,484.75¶	$ 90,347,825.15
Value (estimated) of issues from war surplus (war cost)	$10,000,000.00‖	$12,753,555.00†	$10,389,811.28‡	$15,000,000.00§	$ 15,000,000.00§	$ 15,000,000.00§	$ 78,148,366.28
Total ARMY	$38,965,380.70	$39,950,046.26	$36,341,277.20	$47,543,931.17	$ 62,142,316.86	$ 60,332,638.02	$285,275,590.21
2. POST OFFICE††	$ 2,743,750.00	$ 1,498,674.00	$ 1,897,151.00	$ 1,418,146.00	$ 2,653,862.00	$ 1,264,495.00	$ 11,476,098.00
3. NATIONAL ADVISORY COMMITTEE ON AERONAUTICS	$ 450,483.00‡‡	$ 300,609.00**	$ 214,151.53**	$ 193,859.26**	$ 199,210.31**	$ 174,296.75**	$ 1,532,609.85
4. NAVY.							
Expenditures from direct appropriations for aviation purposes	$15,135,000.00	$14,637,397.91	$14,655,348.28	$14,231,679.25	$ 17,383,967.11	$ 22,529,704.90	$ 98,573,097.45
Expenditures from indirect appropriations.¶¶							
Printing and binding	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$
Salaries, Navy Department	178,015.00	143,268.00	116,708.00	102,750.00	100,000.00	104,000.00	
Pay of the Navy	7,065,253.00	6,817,753.00	6,774,134.00	8,506,000.00	8,522,190.00	11,931,066.00	
Pay of the Marine Corps	728,929.00	636,258.00	666,965.00	769,210.00	686,720.00	686,720.00	
Provisions, Navy	698,396.00	657,347.00	854,669.00	876,460.00	821,680.00	1,150,352.00	
Provisions, Marine Corps	170,820.00	134,901.00	131,765.00	211,880.00	233,000.00	223,500.00	
Ordnance and Ordnance Stores	1,477,388.00	206,292.00	300,000.00	476,600.00	327,000.00	327,000.00	
Bureau of Engineering	371,957.00	250,255.00	266,630.00	85,000.00	25,000.00	60,000.00	
Bureau of Construction and Repair	494,517.00	123,406.00	343,301.00	41,000.00	15,000.00	50,000.00	
Naval Reserve Force	317,000.00	377,000.00	137,322.00	25,000.00	150,000.00	125,000.00	
Maintenance, Supplies and Accounts	351,103.00	129,558.00	240,000.00	140,000.00	175,000.00	170,000.00	
Medical Department	50,000.00	50,000.00	50,000.00	50,000.00	65,000.00	60,000.00	
Transportation, Navigation and Pay							
Miscellaneous	164,370.00	169,796.00	86,000.00	218,000.00	297,142.00	212,244.00	
Fuel and Transportation	297,821.00	245,333.00	12,600.00	88,765.00	15,000.00	20,000.00	
Increase of the Navy (Saratoga and Lexington)	13,971,277.00	30,312,707.00	——	——	——	——	
Total	$26,346,846.00	$40,263,874.00	$ 9,990,094.00	$11,600,665.00	$ 11,442,732.00	$ 15,129,882.00	$114,774,093.00
Value (estimated) of issues from war surplus at book value (war cost)	$ 829,715.00	$ 3,000,000.00	$10,724,298.00	$10,724,297.00	$ 11,000,000.00	$ 10,724,298.00	$ 47,002,608.00
Total NAVY	$42,311,561.00	$57,901,271.00	$35,369,740.28	$36,556,641.25	$ 39,826,699.11	$ 48,383,884.90	$260,349,798.45‡‡
GRAND TOTAL	$84,471,174.70	$99,650,602.08	$73,822,320.01	$85,712,577.68	$104,822,108.28	$110,155,314.67	$558,634,096.51

REMARKS

* Records of cost of Air Service not available. Costs shown based on percentage of Air Service to total strength of Army.
† Statement Supply Group, O.C.A.S. 11/27/24.
‡ Report, Supply Group: see C.A.S. letter to Chief of Finance 9/27/24.
§ Value not known and this value assumed.
‡ Prepared by Chief of Finance, War Dept., for Hearings, Appropriations Subcommittee, House of Representatives, fiscal year 1926.
¶ Chief of Finance to Chief of Staff, 7/28/24.
‖ Statistical Section, General Staff, 11/28/24.
** From "The Budget".
†† From data furnished by Post Office Dept. Dec. 22, 1925.
‡‡ From data furnished by Navy Dept. Dec. 14, 1925.
‖‖ Office, Chief of Finance, U.S.A.
‡‡ From data furnished by National Advisory Committee on Aeronautics.
¶¶ Notes on expenditures from indirect appropriations: Under "Increase of the Navy", fiscal year 1924, $30,312,707 represents total expenditures for the Saratoga and Lexington from the time they were laid down as battle cruisers up to and including June 30, 1924. The appropriations and expenditures listed include the cost of maintenance, operation and repair of aircraft tenders and the carrier Langley including the pay and subsistence of aviation personnel attached thereto. The figures, however, do not include the pay and subsistence of the operating crews of these vessels, which through June 30, 1925 amounted to approximately $6,781,314.

(The figures given above are the most authoritative now available. Their accuracy is limited as set forth under "REMARKS.")

December 24, 1925.

Radio Direction Finding

The Superintendent of Radio, Air Mail Service, Reports Results of Experimental Work.

THE results of several years of experimentation in radio direction finding, with a view to furnishing added safeguards to mail pilots and planes, are contained in a report made recently to W. Irving Glover, Second Assistant Postmaster General, by Eugene Sibley, Superintendent of Radio, Air Mail Service.

It is the belief of Post Office Department officials that the time is not far distant when radio will become a salient factor in keeping air mail pilots on their courses and in directing them to safe landings in fog and other weather conditions where visibility is bad.

Marine Problems

Marine radio direction finding, at the start, generally utilized non-directional transmitters aboard ship and directional loops at the land stations. This was not generally satisfactory as ships were required to take their turn to find their positions from land stations and, during unfavorable weather conditions, heavy radio traffic was involved. This method has yielded to the scheme of ships carrying receiving loops in order that they may take bearings and plot positions when stations are transmitting, thus paralleling the old method where mariners took bearings on familiar objects and light houses, the difference being that a greater range is obtainable and fog and similar weather conditions do not prohibit the radio direction finding.

It is not possible for airplanes to await their turn like a ship at anchor. To employ the first marine method, it would be feasible to have a plane transmit at few minute intervals, while stations take continuous readings, keeping a plot of the course so that the navigator could, at any time, be told about his position without first establishing communication and then taking readings. Small planes, which are generally manned by one man—a pilot—could not take bearings with a rotatable loop, as the plane moves at high speed, and the position could not be figured by triangulation. Fixed loops can be used with but fair success as the planes frequently contend with side winds and fly crabwise. Reception on a plane is better when using an open trailing antenna than when using a loop, as a loud signal is required to overcome the interference caused by the noises aboard the plane, and high amplification increases the electrical disturbances generated on the craft.

Simplicity and Efficiency

An ideal arrangement seems to be one that provides the greatest simplicity and efficiency of operation under the worst conceivable atmospheric conditions, because the urgent need for the system goes hand in hand with the worst weather conditions, when often static is heaviest. The apparatus must be simply and ruggedly made so that a pilot untrained in radio operation can depend on precision results with minimum operation. A broken wire and poor contacts within the set cannot be repaired while the plane is in air; there must be no failures possible or the pilots will not have the required confidence to depend upon the set when its use may result in safety of life. Simplicity of construction means less wires and material to fail. The same ideas apply to the transmitter construction and operation.

Apparently, the best method is the one now used, which is an outgrowth of a number of old schemes. Its predecessor was a method using a trailing, non-directional wire for reception on the plane, and two transmitting loops at about right angle to each other on the ground. Either mechanically or manually a "T" could be transmitted on one loop and then the other, at exactly the same wave, and the receiver could tell whether he was receiving a louder signal from one loop than from the other. The loop transmitter is directional in the same way as a receiving loop; i. e., maximum transmission in its plane and decreasing to zero at a right angle to the plane of the loop. The maximum and near maximum is broad and the decrease is greater per degree toward the ninety degree position. If the signals be equal, the receiver is at the bisector of the angles made by the planes of the loops, and the airplane is on the correct course. This zone of equal signal can be likened to a narrow beam from a searchlight, with darkness on either side of the beam. The dark area is similar to the zone of unequal signals. It is difficult to gage audibility differences in this manner and a more reliable method had to be devised.

Intense research work by the Bureau of Standards and the Army resulted in what we can consider the most practical present method for guiding airplanes. The Army used spark transmission but the transmission developed by the Air Mail Service, with the assistance of Army engineers, at Monmouth, Ill., utilized a 1000 cycle hummer modulated tube transmitter and this, with the proper relay device, gave the desired interlocking signal, and also provided telephone transmission to the pilot. The first work at Monmouth was on about 850 m., but, at this high wave, a mast at least 100 ft. high and loops 300 ft. long at the base are required, and these dimensions are a hazard on flying fields. The work will be continued at Maywood, Ill., first trying 100 m., which frequency has given promise of the desired results from preliminary work at Monmouth. A range of 50 mi. was obtained from 100 watts antenna power. It is hoped that aperiodic loops can be used, supported at the center by a mast about sixty feet high with bases about 125 ft. long. Rotatable loops are hardly feasible.

Technicalities of the System

The Marconi-Bellini-Tosi system, which is, in part, somewhat similar to the method developed by the Army, Bureau of Standards and Air Mail Service, utilizes two directional single turn loop aerials, fixed at right angles, each radiator being connected in series with its non-radiating coupling coil within the goniometer. If a tuned loop be used, there will be balanced inductance and capacity on each side of the goniometer. ("goniometer" is the name applied to a frame containing the coupling inductances between the closed circuit and the radiating circuit, pointer, dial, etc.) In the goniometer, within the center space occupied by the two right angle coupling coils, there is located the field, or search coil, generally a turn or two of inductance in transmitters, which is in series with a capacity and an inductance, the inductance being coupled to the inductance of the tuned closed circuit of the oscillation generator. Inversely, the radio frequency is generated, then passed on to the coupling circuit and then to the radiating circuit, the current in each loop depending upon the coupling between the field coil and each loop. The transmitted wave direction depends on the position of the field coil.

Alternating Wave Directions

In considering direction of transmission in this "MBT" system, disregard the fixed radiator loops, as the direction of maximum transmission is in the plane of this field coil and the results are the same as would be if this rotatable field coil were a large transmitting loop and the other loops did not exist. In fact, the radiators can be termed "phantom" loops. In receiving, the magnetic fields of the right angle fixed loops produce a resultant field and, since the two field coils are at right angles, the resultant flux is calculated from the simple formula used for computing the hypothenuse of a right angle triangle. In transmitting, results are the same. The Army, at McCook Field, by using two field coils with a common connection on one side and a switching device for changing

the current from one to the other, has found that the wave can be sent in one direction and then the other, dependent upon the displacement angle of these field coils. The width of the equal signal zone is governed by the displacement angle of the field coils.

The interlocking signal method, which was added to the Marconi-Bellini-Tosi system, utilizes automatic transmission with such letters as "N" and "A". The dash of the letter "N" is sent on one loop, then the dot of the letter "A" on the other loop, followed by the dot of "N" on the first, then the dash of "A" on the second loop. The transmission is so timed that the ear cannot detect any space between the characters when the receiver is at the point of equal signal reception. The result is that the operator, when within the equal signal zone, hears a long "T". It is a perfectly blended signal, the length of which is equal to the time between the start of "N" and the end of "A". About twelve of these combined groups are sent per minute, and, when the pilot is on the correct course, he hears a succession of dashes. If the plane leaves the correct course and flies into the "N" zone, he will hear "N" louder than "A" and he will then fly until the long equal zone dash is heard. If he gets far enough into "N", he will be at a right angle to "A", when he will hear no signal from "A" and a loud signal from "N". He will then change his course until "A" is received and continue until he receives the long even dash—the correct course.

This is unique "beam" transmission. By using a radiophone transmitter, ICW modulated at 1000 cycles for telegraphy, it is a simple operation to transmit speech on the same wave, telling the pilot of weather conditions, or giving any directions necessary to aid the navigation. By developing short wave, lighter weight, and comparatively powerful radiophone transmitters for airplane use, there is available, two way communication and this can be added to directional receivers at ground stations to maintain a graph of the pilot's course by taking bearings of the plane at frequent intervals also, emergency communications can be received from the plane.

The beacon transmitter will keep a pilot on the course but will not tell him how far he is above the ground. The ordinary airplane altimeter indicates how high a plane is above sea level. Work has been done to devise methods of locating airplane altitudes above the ground but so far the results are not favorable. The sound waves, used on sea craft to locate water depth, are adaptable on balloons and airships but the return sound wave from the ground to the plane is broken up and cannot be heard through the engine and other mechanical noises. When an airplane is directly over a flying field, radio and sound could be combined by a more or less elaborate method. A sound can easily be heard from a plane on the ground. This sound could be automatically collected and transmitted through a radiophone transmitter to the plane and the time involved would be the time that the sound wave would take to travel from the plane to the ground. The speed of the radio wave is too high to enter into the short distance calculation.

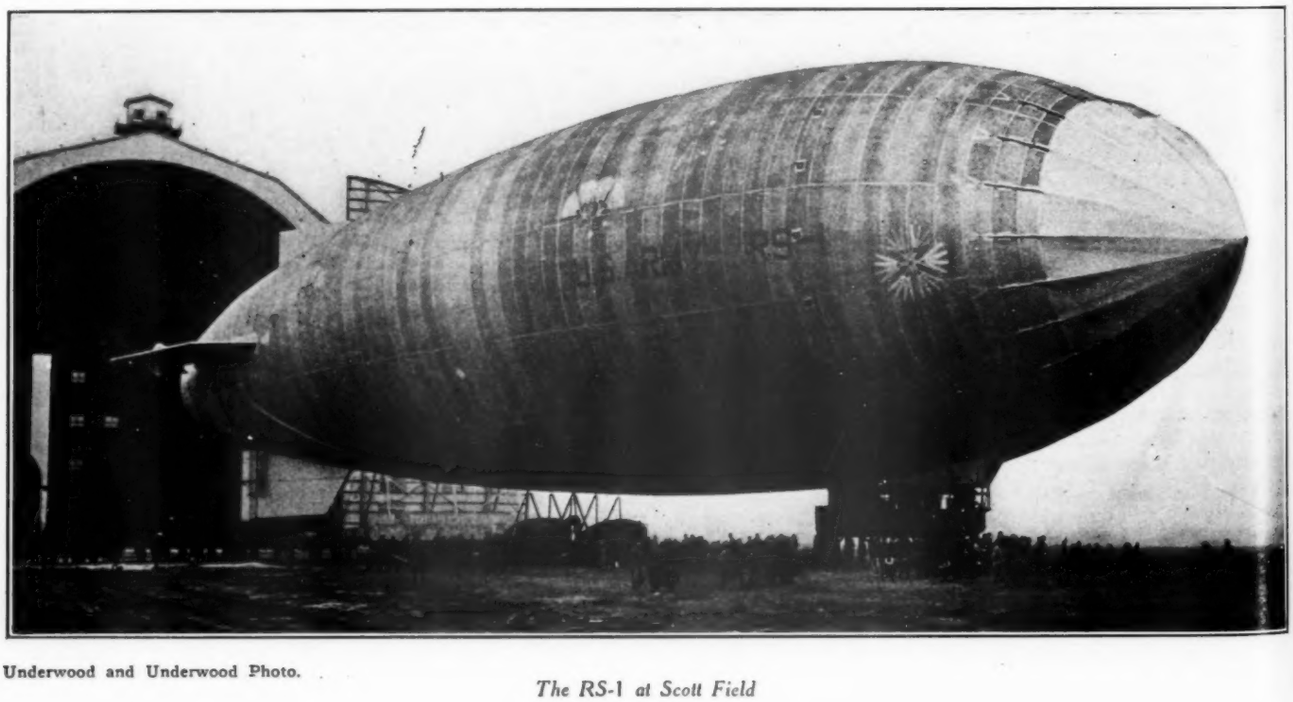
All the work connected with the construction of radio beacon transmitters and adjustment of apparatus must be precise. The radiation must be equal so that signals equally distant from the maximum planes of the radiators will be equal or the beam will be thrown to either side. To attain this, the antenna current will generally be the same in each loop, antenna resistances will be equal, and the radiators of equal dimensions and similar arrangement. There must be no coupling between any of the circuits other than at the points where there is designed to be a transfer of power. It is a common failure in construction to have a transfer of energy between radiators and this must be eliminated. Power and communication lines are buried for several hundred feet from the transmitter, and the ground under the loops should be electrically uniform.

RS-1 on Trial Flight

The RS-1, the world's largest semi-ripid airship, took the air from Scott Field late on Jan. 8 on its trial flight and made a safe landing at 6:20 p.m. after an hour's cruise in a mild snowstorm.

Carrying a crew of eight men and, with Lieut. Orval Anderson in charge, the airship left Scott Field and ascended gracefully. The velocity of the wind was eleven miles an hour.

The ship circled about the field and was in the air almost an hour. Lieutenant Anderson, upon landing, reported a successful flight, The average speed was forty m.p.h. The RS-1 is 282 ft. long and has a capacity of 755,500 cu. ft.



Underwood and Underwood Photo.

The RS-1 at Scott Field

The Buhl–Verville Airster CW–3

A General Service Commercial Plane of Sturdy Construction. Folding Wings a Notable Feature.

A NEW addition to the class of the small commercial airplane is the recently completed CW-3, the latest product of the Buhl-Verville Aircraft Company of Detroit, Mich. Mr. Verville will be remembered as one of the pioneer airplane designers in the country, having built his first plane no less than ten years ago. This was a flying boat and it was constructed in Detroit as was also one of the first metal nacelle pusher type planes, this being designed and constructed also by Mr. Verville. For the past six years, it will be recalled, Mr. Verville has been in charge of the racing and pursuit design section of the Air Service Engineering Division at McCook Field. During this time Mr. Verville directed the design of the U. S. Verville Sperry Messenger plane, the D9, the Verville Packard Racer, the Verville-Sperry Racer, the U. S. D4 Ambulance plane, the VCP1 and PW1 pursuit planes. In 1918 he was sent to France in charge of a special mission, by Air Service, to study airplane design. In 1921-22 he accompanied General Mitchell on a tour of inspection of European aviation for the Air Service. He was awarded a certificate of merit by the War Department for the design of pursuit planes. Mr. Verville was also a technical adviser to the congressional committee of inquiry in the United States Air Services in 1925.

For Wide Range of Service

The CW-3 is a sturdy, serviceable, efficient type, combining design features which facilitate its adaptability to the following types of service: passenger carrying, light freight carrying, aerial photography, crop dusting, and training. Furthermore, the machine is designed with a degree of ruggedness and strength compatible with the classes of work for which the plane is intended. Arrangements are provided whereby almost any power plant between 100 and 200 hp. may be installed, only simple changes being necessary, since the engine mount is detachable. The wide range of aerial service to which this plane, with its various pay loads and power plant combinations, can be put, make it a very serviceable general purpose plane.

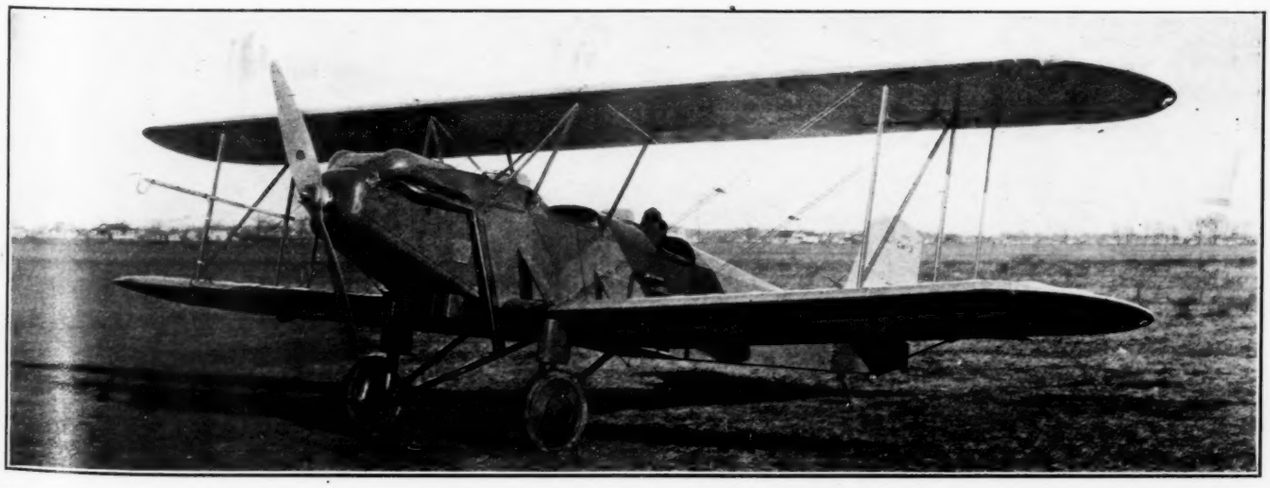
The wing cellule is of the biplane type, without stagger. Both upper and lower panels are interchangeable, and are hinged to the upper and lower sections and wing butts, respectively, with fittings designed to allow the folding back of the wings on the field, in order to facilitate the storage of the airplane within a restricted hangar space of approximately 9 ft. high by 13½ ft. wide by 25 ft. back. These wings can be folded back in twelve or fifteen minutes. When the size of the machine with wings extended to their full span of 35 ft. is compared with the folded span of 13½ ft., the benefits to be derived from this scheme are readily apparent. This feature would likewise be of considerable advantage for storage on board ship, in case this type were used for shipboard reconnaisance purposes. It would also be of value in an emergency forced landing where it would become necessary for the pilot to tow the machine to a larger field in order to take off again. This would be facilitated by the ease with which the wings can be folded back without the loss of time and hazard entailed in ordinary cases when the wings must be taken off completely and again rigged up on the field without proper means of gaging the general alignment of the plane.

Steel Tube Fuselage

The fuselage is of steel tube construction, welded into an integral structure without any wire or braces of any nature. This feature obviates the necessity of continual rigging and truing up. Steel tube construction adapts itself very well to repairs on the field, as any welding can be carried out with an oxy-acetylene torch, and steel tubing is used of an ordinary commercial size and grade which is readily obtainable in the open market.

Two cockpits are provided in the fuselage, the aft being for the pilot, and the forward one for the passengers. Both cockpits are provided with comfortably upholstered seats. Immediately ahead of the pilot's cockpit is a small tool and baggage compartment. The passenger's cockpit is 35 in. wide, this allowing comfortable seating accommodation for two people sitting side by side. In the case of a freight plane or crop-dusting plane, the seats in the front cockpit can be removed, thus making provision for a capacity of approximately 23 cu. ft. in volume. Access to the passenger compartment is facilitated by a triangular hinged door, located on the left side. Windshields, fastened to the cowling deck, are provided for both cockpits.

The controls are of the stick and rudder bar type, dual controls being optional, depending upon whether or not the plane is to be used for training. The control is by means of wire cables extending, in the case of the elevator controls, from the control column back to a counter shaft in the after end of the fuselage, from the extremities of which extend radius rods to the elevator posts. Attached to the rudder bar are two sets of cables, one set extending back to the rudder posts for rudder control, and the other set to the tail skid for ground steering while taxiing.

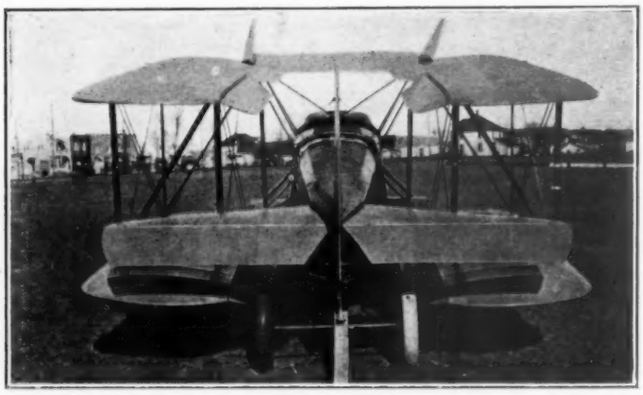


Three-quarter front view of the Buhl-Verville CW-3

The pilot's instrument board is equipped with an air speed indicator, clock, altimeter, oil pressure gauge, radiator thermometer, switch and carburetor choke adjustments. A parachute seat is fitted for the pilot, and parachutes can be worn in the front cockpit if desired.

Adjustable Stabilizer and Fin

The tail unit consists of a stabilizer, vertical fin, divided elevator and rudder. All of these tail surfaces are of welded steel tube construction and fabric covered. The two elevator sections are identical with each other and with the rudder. The stabilizer is made up of two triangular halves, bolted and braced on each side of the fuselage and provided with angle adjustment which can be effected on the ground.



Rear view of the Buhl-Verville CW-3 with wings folded.

Special adjustment is likewise provided for the fin, in order to counteract the propeller torque reaction. The stabilizer is braced, on its under surface, to the bottom fuselage longeron, with two streamline tubes and, on the upper surface, to the upper extremity of the rudder hinge post, two streamline wire braces being provided. A large quickly detachable metal inspection door is provided in the after end of the fuselage for inspection of the tail skid, etc.

One of the most interesting features of this plane is the wide track axleless landing gear. This not only reduces the resistance which is present in an ordinary axle type when taking off, due to high grass, but also lessens the possible chance of accident when landing on rough ground. The wide track furthermore, reduces the possibility of a wing tip becoming damaged in a poor landing. Shock absorbers are of the Oleo rubber disc type. Under loading conditions, these rubber discs are in compression and an internal perforated plunger piston simultaneously travels into a loaded oil chamber at the lower end of the strut. This absorbs the impact energy and neutralizes the effect of the rebound which is so prevalent with the ordinary rubber sprung shock absorbers. It cushions the landing shocks to the extent of saving the whole airplane structure from the deterioratory effects which are occasioned by shocks in bad landings over rough ground.

The CW-3, as at present constructed, is equipped with a 90 hp. Curtiss OX5 engine, cowled under a quickly detachable cowling. A 40 gal. gasoline tank, sufficient for five hours flight, is situated immediately back of the engine, in the fuselage and ahead of the passenger cockpit. The gasoline system is of the gravity feed type. The oil, in the case of the OX5 model, is carried in the bottom half of the engine crank case. The radiator is located immediately under the engine, and is of the underslung type. It is provided with shutters which are manually operated by the pilot in flight. A Reed duralumin propeller is fitted.

Characteristics

The main characteristics of the airplane are as follows:

Span, maximum	35 ft.
Length, maximum	25 ft.
Overall width with wings folded	13½ ft.
Height, maximum	9 ft.
Area of wings	300 sq. ft.
Area of ailerons	28 sq. ft.
Area of stabilizer	21 sq. ft.
Area of elevators	16½ sq. ft.
Area of fin	5¾ sq. ft.
Area of rudder	8½ sq. ft.

With OX5 engine installation:

Weight empty	1380 lb.
Weight fully loaded	2150 lb.
Endurance at full throttle	5 hr.
High speed	95 m.p.h.
Low speed	40 m.p.h.

With Wright Whirlwind (200 hp.) engine installation:

Weight empty	1415 lb.
Weight fully loaded	2300 lb.
Endurance at full throttle	3½ hr.
High speed	133 m.p.h.
Low speed	45 m.p.h.
Rate of climb at ground level	900 ft./min.

The design of this machine incorporates high factors of safety and is, generally speaking, in accordance with the demands of the Aeronautical Safety Code. The minimum factors of safety to which the machine was designed are as follows:

High incidence condition	8
Low incidence condition	5½
Inverted flight condition	3½
Landing condition	7
Ribs, in medium incidence condition	6¾
Height of free drop of shock absorbing unit and landing gear	26 in.
Loads for ailerons and horizontal tail surfaces	35 lb./sq. ft.
Loads for vertical tail surfaces	30 lb./ sq. ft.

The machine has been thoroughly tried out by various pilots, the tests being conducted in a Packard Field.

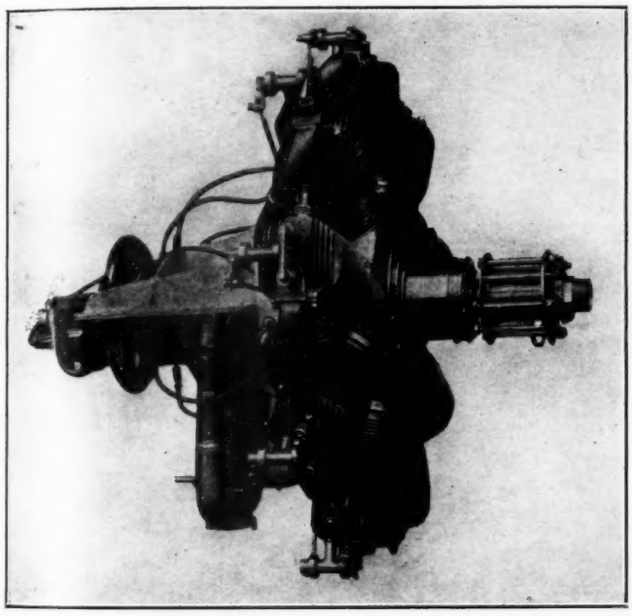
The Buhl-Verville CW-3 with wings folded. This photo gives a fair idea of the shape of the wing section.

The Super Rhone Engine

The Well Known Rotary Engine Remodelled into an Air-Cooled Radial Type.

FOR SMALL commercial airplanes, a very excellent engine is to be found in the Super Rhone, which is a nine cylinder radial air cooled type rated at 120 hp. at a normal speed of 1400 r.p.m.

The Super Rhone engine is the product of painstaking and sound engineering technique. The Le Rhone rotary engine, it will be recalled, was manufactured in this country by the Union Switch & Signal Co., and cost the War Department approximately $4,000.00 each, when ordered in a large quantity, and no better example of mechanical craftsmanship than that employed in the erection of this engine is available. Practically the entire war surplus of this type of engine was purchased by the producers of the Super Rhone at a small fraction of their original cost, which has enabled the production of the new engine such that it can be purchased at a price far less than would be the case were it necessary to construct the engine anew in its entirety.



The Super Rhone Radial Air Cooled Engine

Advantages of the Air-Cooled Type

The Super Rhone engine is another example of the advantages of the air cooled type of engine, in view of the saving in weight over water cooled engines in the same power class. Furthermore, its accessability for service and repair makes it an ideal engine for the purpose for which it is intended. From the nature of its construction, with its taper jointed counterbalanced crankshaft of single throw, complete disassembly can be accomplished by a mechanic of ordinary ability in thirty minutes time, thereby reducing lost flying time in schedule service to a minimum. The saving in weight through the elimination of the radiator and the water piping and connections, as well as the water itself, permits greater pay load than with the water cooled engine, and, at the same time, it removes a cause of frequent trouble with consequent forced landings. The absence of the radiator reduces head resistance, giving greater speed and maneuverability, and again reduces cost.

In the Super Rhone engine, any complications in effective air cooling have been entirely overcome by a simple process which admits fresh air, under atmospheric pressure, to the crankcase, and which forces a complete change of air within the crankcase with each revolution. Thus, excessive accumulation of heat at the center is eliminated by the free passage of fresh cool air, this tending also, by regulation of temperature and pressure, to reduce oil consumption to a minimum.

Novelty in Engine Mounting

The engine mounting, which also serves as an intake manifold, is a strong, clean aluminum casting of tested strength. It carries, on its rear and lower side, a flanged face opening to which the carburetor is attached and from which opening the explosive gases are carried to a central chamber from which they are conducted by individual ducts to apertures in the periphery of the casting where the intake pipes that lead to each cylinder are fastened. Thus each cylinder draws its gases as needed from this central chamber, eliminating thereby the excessive amount of gas in any one cylinder which is the most frequent cause of fouling in air cooled engines and often attributed to lubrication faults. This engine mounting has two properly surfaced flanged extensions toward the rear, two inches wide and thirteen inches long, which form the means of fastening the engine to two engine beds as is the practice in water cooled types. This cheapens installation costs by the elimination of expensive circular mounting brackets, and readily adapts the engine to installation in the usual manner. The engine mounting, also, carries the magneto and oil pump, and the scavenger pump, and it is to be noted that the engine proper may be withdrawn from this mounting without disturbing fuel, oil or electrical connections and controls.

No Vibration

The crankshaft of the Super Rhone has been carefully and efficiently counterbalanced, and vibration is reduced to a minimum. The rear end of the shaft extends backward about 16 inches, and from it are driven the magneto, oil pumps and distributor.

The lubrication of the Super Rhone is effected with orninary mineral oil of high viscosity, easily obtainable in any locality. Castor oil is not needed. Oil is supplied to the pump from which it is forced through a duct drilled through the length of the crankshaft to the working parts.

Specifications

The general specifications of the Super Rhone engine are as follows:

Type	Air-cooled fixed radial
Number of cylinders	Nine
Bore	105 mm. or 4.13 in.
Stroke	140 mm. or 5.51 in.
Piston displacement	667 cu. in.
Compression ratio	5.2 : 1
Direction of rotation	Counter-clockwise
Fuel consumption	6½ to 10½ gal. per hr.
Oil consumption	¾ to 1 gal. per hr.
Rated power	120 hp.
Normal speed	1400 r.p.m.
Weight	340 lb.

The installation dimensions of the engine are:

Length, overall	36 in.
Diameter, overall	36 in.
Engine bed flanges, inside clearance	11 9/16 in.
Engine bed bolts, center to center	13 9/16 in.
Distance, bottom of carburetor to engine bed	13 in.
Distance, hub line to carburetor	19 in.

The engine is produced by Tips and Smith, Inc., who have an exclusive license under patents applied for by Charles E. Quick, the designer of the conversion, who, with his associates, has spent the better part of the past two years in perfecting and developing this engine.

AIR TRANSPORTATION

Air Transport in Poland, Czechoslovakia, and Hungary

Warsaw, Prague, and Budapest, the capitals of Poland, Czechoslovakia, and Hungary, respectively, are among the world's most important air terminals. They are equipped with up-to-date and Government-owned landing fields, where facilities are provided for supplies, repairs, weather reports, and all other necessary adjuncts of successful operation. These cities are not only the termini of long international routes, operated by the French and German air companies, but are also the headquarters of smaller independent air companies, operating shorter lines between these capitals and the important manufacturing and industrial centers of the respective countries.

Attitude of the Governments

The general attitude of the Governments of the three countries is decidedly in favor of developing commercial air lines. They render assistance to local air transportation companies, directly through either cash subsidies or the cash equivalent in supplies (usually gasoline) and indirectly by providing landing fields, radio service, meteorological reports, supervision and control of the inspection of planes and equipment, and the licensing of pilots.

Progress of the Aircraft Industry

Neither Poland, Czechoslovakia, nor Hungary has made any notable progress in the development of new types of planes or engines. Practically all of the equipment used so far has been imported from France, Holland, and Germany. Efforts are being made, however, in each country, to encourage local manufacturers and designers to build planes suitable for commercial use. It will undoubtedly take years for them to be able to compete with such companies as Farman (French), Fokker (Dutch), and Junkers (German).

Operating Companies and Services Offered

In addition to the French company, Franco-Roumaine, and to the companies associated with the German Junkers Luftverkehrs in the Trans-Europa Union, local companies controlled by local capital and backed by local governments have been operating, and new companies are being formed.

Polish Lines in Operation, 1922-1924

The Polish Air Line (Polska Linja Lotnicza) operates daily services between Danzig and Warsaw, Warsaw and Lemberg, and Warsaw and Cracow. Passengers, freight and mail are carried.

A favorable upward trend in all traffic for the year 1924, compared with 1922 and 1923, is shown in the following table:

Traffic handled by the Polish Air Line, 1922-1924

Item	1922	1923	1924	Total
Trips	246	542	1,092	1,880
Miles flown	54,209	118,380	227,800	400,389
Passengers carried	527	1,671	2,193	4,391
Pounds of express carried	20,746	27,529	66,599	114,874
Pounds of mail carried	650	895	1,447	2,992

There have been no fatal accidents during the three-year period, owing largely to the fact that flying is almost entirely over level country where forced landings are easily made and atmospheric and aerial disturbances are few.

New Polish Lines and Concessions, 1925

In 1925 a new line was started by the Polish Air Line Co. from Cracow to Vienna. The company has been contemplating an extension to Rome, via Trieste, and, if negotiations with the Italian Government are successful, this service probably will be started in 1926. The company also plans to operate a line from Danzig to Copenhagen, via Puck and Malmo. It is understood that a ten-year concession has been granted by the Danish and Swedish Governments and that the service will be started in 1926. The extension of the Warsaw-Lemberg line to Constantinople, via Czernowice and Galatz, is also contemplated.

This company operates twelve all-metal six-passenger monoplanes and two triple-engine seaplanes of Junkers construction. The seaplanes are for use on the proposed Danzig-Copenhagen route.

The "Aero" Co. of Posen, organized in 1925, has been granted concessions for lines between Posen and Warsaw, Posen and Danzig, Posen and Kattowitz, and Posen and Berlin. Service was begun over the Posen-Warsaw line on May 23, 1925. The other lines probably will be started in 1926. The company has six Farman biplanes, with a capacity of six passengers each. No figures showing the traffic handled by this company are, as yet, available.

Concessions also have recently been granted to the "Polavia" Co. for the exploitation of air lines between Warsaw and Stolbce, via Vilno, and between Warsaw and Lodz, Lodz and Danzig, and Lodz and Kattowitz. Beyond deciding to purchase De Haviland planes, the company has done nothing to develop its concessions.

Hungarian-Budapest-Vienna Service, 1923-1924

The Hungarian Air Traffic Co. (Magyar Legiforgalmi R.T.) operates a daily service between Budapest and Vienna. This company began operating in 1923, and the following table gives the traffic figures for 1923 and 1924.

Traffic handled by Hungarian Air Traffic Co., 1923-24

Item	1923	1924	Total
Trips	151	367	518
Miles flown	20,500	50,355	70,855
Passengers carried	355	699	1,054
Pounds of freight carried	8,467	13,232	21,699
Pounds of mail carried		35,942	35,942

The 1924 figures show an increase in traffic of all classes, and it is especially interesting to note that 35,942 lbs. of mail were handled in 1924, compared with none in 1923. There were no fatalities in either year, and the records for 1924 show only four forced landings and 15 scheduled flights abandoned because of unfavorable weather, during the entire flying season from May to the end of November.

Hungarian Service Covers Highly Competitive Route

While the volume of traffic is not large, it should be born in mind that the Budapest-Vienna service is one of the most competitive in the aviation field. The company is in competition not only with the French company "Franco-Roumaine", but with the Hungarian company "Aero-express" and the Austrian Air Transport Co., both associated with the Junkers Co. in the Trans-Europa Union.

Czechoslovakian-State Services, 1924

The Czechoslavak State Air Lines (Ceskoslovinska Statue Aerolinie), operating a daily service between Prague and Kosice, via Brunn and Bratislava, began operating in 1924. Traffic records for that year (March 1 to October 31) show 634 flights, covering 125,672 miles and carrying 426 passengers, 4,378 lbs. of freight, and 355 lbs. of mail. No serious accidents occurred, and only seven forced landings were reported, of which two were caused by bad weather and five by engine trouble.

This company has four airplanes in regular operation and twenty in reserve. The reserve planes are frequently used for special trips, excursions, and for propaganda purposes. The planes are of French, English, German, and local manufacture and are of various capacities.

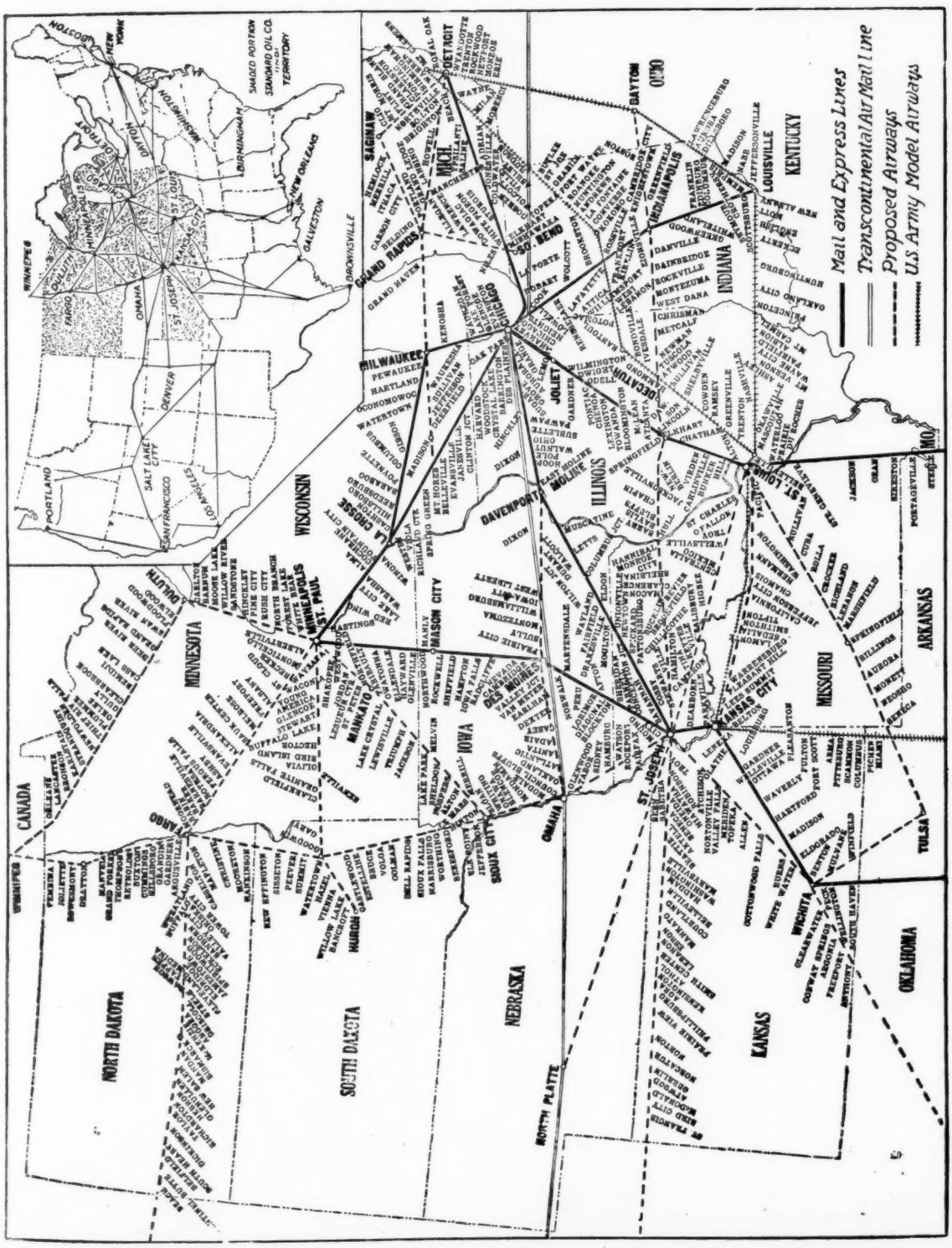
A New Czechoslovakian Line, 1925

The "Aero" Co. entered the operating field in 1925, running a daily service between Prague and Marienbad. This company was formerly engaged solely in the manufacture of aircraft, and the planes used are the "Aero" type 22, built in their own factory. These planes have a capacity of two passengers in addition to the pilot. Four planes are in service, two in daily operation, and two held in reserve. No traffic figures are, as yet, available.

Plan to Mark Airways in Ten Middle Western States

System of Airways and Landing Fields to Include 1,500 Towns Has Been Developed by the Standard Oil Company (Indiana) at St. Joseph, Missouri

WORK ON establishing the airways, shown on the map, has been started and will be completed in the near future. The plan will include the marking of 1,500 towns in the States of Missouri, Iowa, Illinois, Michigan, Minnesota, Indiana, North Dakota, South Dakota, Wisconsin and Kansas. Markers will be placed on the bulk stations of the Standard Oil Company of Indiana, who are cooperating in the project in this way, with the St. Joseph Chapter, N.A.A.



What Pilots Think About Air Legislation

More Letters from Pilots Throughout the Country Expressing Views on Air Legislation

Help Public as Well as Fliers

I have been flying safely for seven years without a license. I have never considered the present form of pilot's license worth any more than a passport to the air races. However, I should like to see such regulations as would make licensing of pilots a service to the public as well as to the fliers.

I would suggest a Junior license for those learning to fly, requiring them to pass the usual test of the present form of licensing, but restricting them from carrying passengers. I would also suggest a Senior license to be granted to pilots who have had sufficient experience to carry their cargo safely to its destination. This would include cross country flying, study of navigation, storm warnings, emergency landings, night flying, experience on all types of planes, and a better knowledge of the theory of flight. Such a license would be to aviation what the C.P.A. is to accountancy. It would insure safety to those above and those below.

My best income has been from aerial advertising contracts. I covered 60,000 miles for one concern at an income far beyond what I could demand in any other line of work. Begining March 1st., I am starting a tour of the New England states on an extensive advertising campaign, using four "Waco" planes.

I believe state regulation would be too conflicting for aviation purposes.

PAUL R. REDFERN,
Columbia, S. C.

Will Kill Nationwide Business

I have always been opposed to regulation of any sort, and, of course, the stricter the regulation, the greater my opposition. I know a number of other small operators feel the same way, and no doubt hundreds would be opposed to it if they had only given it some thought. The trouble, I believe, is that the average small operator feels a little too secure, in the first place, and does not realize the seriousness of the situation and, in the second place, feels that he hasn't enough influence himself to do any good, anyway. Hence, your effort to secure the opinions of these men, who will be most affected, should prove to be a great service.

Every operator has his own reason for wanting or not wanting regulation. I am not going to attempt to point out all the objections, but only the ones that will affect our organization, and hence our antipathy toward regulation.

Unless such regulation should prove very severe indeed, I do not think it would put us out of business. We have good equipment. We are using three types of planes: The Curtiss JN4D, the Standard J1, and the K6 Curtiss Oriole, and expect, in the near future, to add either a Swallow, Travel-Air, or Waco to our equipment. Our pilots are all good men who have been flying for years. Our equipment has always been kept in A1 first class condition. We have been operating for six years and have never injured anyone, either pilot, mechanic, passenger, or student.

We started out with one JN4D, and no other capital. All of our growth has been out of our net earnings. The last year has been exceptionally profitable for us. Everyone in Peoria speaks well of us. We have our Association of Commerce interested in getting a new large field, half a mile square. Any air laws would have to be very strict to put us out of business.

However, this is what they can do. (1) They can kill all of our business of a national character, leaving us only our local business. (2) They can hinder our operations with much unnecessary red tape. (3) They can add a lot of license fees, inspection fees, etc., to the total of our expenses.

A large part of our revenue is derived from the operation of a flying school. Our courses are from six to twenty hours in duration, the average being fifteen. During the years we have been in operation, we have trained many pilots who have become very successful. One of our pilots, W. H. Bradford, is, at the present time, flying an Air Mail and Freight line in Honduras.

Aerial regulations would probably destroy a great deal of the incentive for a young man to learn to fly and hence would cause the closing of our flying school.

We agree that it would be better if a more thorough training than the fifteen hour flying course could be given, even though this enables the graduate pilot to fly with a reasonable amount of safety. However, if it is thought that students should have more time, why not do something constructive? Why not adopt a system like the French Army used in the early days? Instead of using a training school of their own, they sent their officers to a civilian school to be trained, paying the civilian school for this service.

Now, suppose the Government would appropriate a sum of money to be used as follows: For every pilot trained, who could pass a given examination (tests to be of such a nature that at least 50 hours would be necessary to pass successfully), a sum of $250 would be given to the school giving this pilot his training. Consider what a reserve strength this would build up. Of course, the $250 wouldn't be enough to train the pilot, but it would make it possible for schools to put their tuition down to a price where many students could be enrolled, and the poorly trained pilot eliminated.

But that is the trouble with most of these proposing regulations. They never propose anything constructive. Instead they propose regulations which will kill.

Another thing is that most of the proposed regulations are drafted by men who fear the danger of airplanes. They regard them as weapons of destruction. They think they have to be handled like T.N.T. They think a superman is required to operate them. Any man with average nerve and intelligence can operate a Swallow, Waco or Travel Air, with safety. If flying is a game for supermen only, it can never be practical.

In any means of transportation, some death and injuries are bound to occur. I do not believe that the flying done by the small operator is any more dangerous than any other type of flying. In fact, I am confident that their accidents per flying mile are less. Incomplete records make them appear more dangerous because all crashes are naturally recorded, but not nearly all the flying done is recorded.

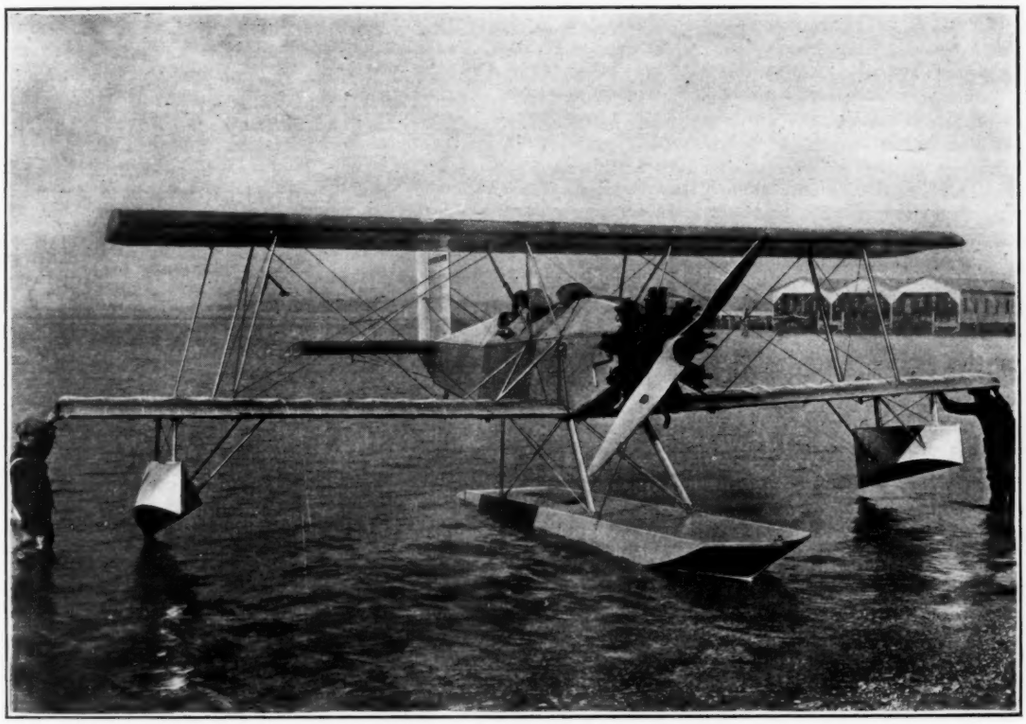
Suppose the real small operator is regulated out of existence. We and other flying schools will not be advertising in AVIATION. Supply houses will not be advertising supplies as there will be no one to sell them to. Waco, Swallow, and Travel Air will have no market and hence no reason for advertising. Cut out all advertising of this sort and how will it effect aeronautical publications. Many interested in aviation will lose interest and cease to subscribe to these magazines.

I am heartily in favor of big transport ideas like the National Air Transport and the Ford Airways. But how many people will they take for their first airplane rides?

Flying is still in a pioneer or development stage and should not be hampered in its development by red tape. We should encourage people to buy and operate airplanes instead of discouraging them. Why not let it develop unhampered for a few more years at least? Possibly at that time we can see more clearly what regulations are really needed.

ALEXANDER VARNEY,
Peoria, Ill.

SPEED WITH SAFETY



CURTISS LARK SEAPLANE

THE CURTISS LARK SERIES

Commercial aviation in the United States is entering a period of transition.

The JNs, Standards and other surplus war machines, which have been available to the commercial operator at low prices and which have done much to popularize flying, are approaching the end of their usefulness because of their age and their relatively slow speeds and small carrying capacity.

To meet this changing condition several machines with a better performance and relatively low prices have been developed around the OX motor. Though these machines are serving a very important purpose, the past year has created a demand for a machine of still higher performance capable of carrying payloads of over 500 lbs. at a cruising speed of about 100 m.p.h.

The Air Mail feeder lines require such performance. The Curtiss Flying Service, Inc., which has just completed its most successful year with over 175,000 miles of paid commercial flying, report an increasing demand from the flying public for machines of greater speed and carrying capacity with a longer flying range.

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Write for Curtiss Lark Series Booklet.

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GARDEN CITY, N. Y.

Believes Bill too Early

In regard to the bill introduced by Senator Bingham, I think most parts of it are all right. However, I do not think we need it just yet, although it will be satisfactory, if the fees are not too high.

We haven't much aviation as it is, and, therefore, I do not think we should have any strict laws as yet, although it will do much good if passed.

I am flying a new Travel Air, powered with an Aeromarine, six cylinder engine. I also have a Canuck. I also fly a new Travel Air with an OXX6.

I think Federal regulation would better conditions at present.

JOHN GREEN
Perry, Oklahoma

Favors Immediate Registration

Laws requiring registering of all aircraft and licensing of all pilots are necessary and should be passed at once. The registering of aircraft and licensing of pilots should be made as convenient as possible at the present time, and should be issued on sworn and witnessed statements. The government would then have a record of all commercial aircraft and pilots.

The registration identification marks painted on aircraft and the display of a government license would naturally give greater confidence to the general public and prestige to the operators holding these credentials.

Six months time should be given after the law is passed to apply for the license, after that time it should become a crime to carry paid or unpaid passengers without license. However, the penalty should not be over $100.00 fine.

To all holders of government licenses should be mailed regularly, free of charge, general information valuable to aircraft navigation issued by the government.

In issuing these licenses the government should assume no responsibility that the aircraft is airworthy or the pilot properly qualified. However, the applicant does assume the responsibility that the aircraft and pilot are airworthy. The bureau should refuse to grant licenses if it is reasonably sure the aircraft is unairworthy or the pilot not qualified.

Before a more strict and rigid personal examination and inspection is enforced, the details of this procedure should be carefully outlined and presented to all branches of the aircraft industry for its consideration. So many ramifications are possible that politics and personal feeling could kill all the good intentions of such inspection, and at this time when this country can claim more commercial aviation activity than the rest of the world combined, it would be indeed a set-back instead of being helpful.

E. A. JOHNSON,
Dayton, Ohio

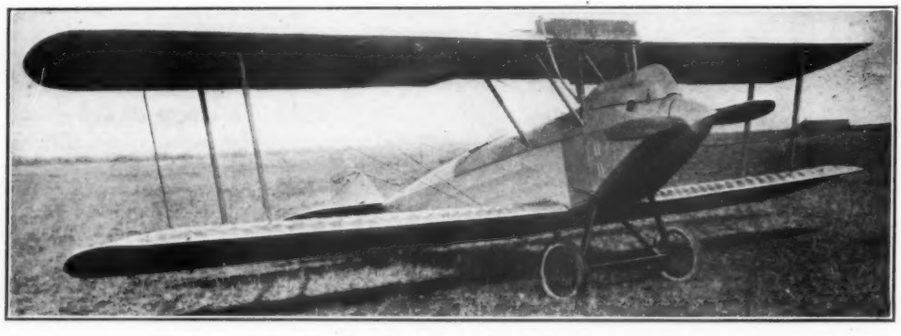
Discussing Nomenclature

Senator Bingham favored me with a copy of his aircraft bill. There is no reason why certain parts should not be more widely known before the advocates of regulation find themselves tied in a lovers' knot that may seem right to the large operator, but which will certainly be oppressive to the majority.

The term "airman" in the bill means any individual, (including the master and any pilot, mechanic or member of the crew) who engages in the navigation of aircraft while under way, and any ground engineer who is in charge of inspection, overhauling, or repairing of aircraft. The effect of this provision will be that a man, who may have grown old in building aircraft and has secured that thorough knowledge which only comes with years of experience, will be unable to act as ground engineer unless he is also an airman, which requires a degree of youth that affords no time for the acquisition of the skill in various constructive arts that a responsible manager should possess.

The chances are, that qualified airmen will be too scarce for any to be tied to ground duty needlessly. Nor should

THE SWALLOW MAIL PLANE



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SWALLOW AIRPLANE MFG. CO. Wichita, Kans.

operators and owners of feeder or taxi lines be debarred from using any competent and available skill in the maintenance department, where self interest would insure that equipment be maintained in good condition.

I have suggested an alternative definition. The term "airman" could mean any person, whether master, pilot, or other member of a crew, who exercises direct control of aircraft in flight. That would not bar an airman from acting as a ground engineer, yet would allow operators to do their own repair and overhauling although they were not airmen.

Your readers who can't take a joke, may be interested to know that we have a whole county full of Modocks in this state and no hard feelings, it being the name of one of the northern counties.

WILLIAM CHALMERS,
Sacramento, Cal.

Would License all Pilots

We believe that every pilot should appear before some board of experienced examiners and qualify for his license before being permitted to operate a plane, the same as a steam engineer has to pass his examinations. We favor the promotion of aviation but feel at heart that an airplane is identical with a steam engine, and we strictly advise pilots that are capable of flying to qualify for their license.

F. PARKER,
Anderson, Ind.

For Conservative Federal Control

I am of the opinion that any control of the operation of aircraft should be Federal and along marine lines, with whatever changes may be required to fit the situation.

I am very much against any drastic legislation at present, as even the possibility of it is doing damage by slowing up sales, as there is a strong suspicion that there would be considerable graft connected with the license and condemning of planes.

Should the planes now in use be condemned in order to force the operators to buy new ships, it would paralyze the industry.

The situation in the West is as follows: A number of excellent fields and schools are being opened; interest is increasing and in a short time we will have plenty of fields and a lot of new people in the air. What is helping is the fact that good strong planes that cannot be excelled for the purpose, can be had at a low price. If this situation is left alone it will work itself out in another year or so to an advantage to the flying business as a whole.

There are undoubtedly a few planes flying in every part of the country that should not be allowed in the air. A conservative control of this situation should be welcomed by everyone. Such a control should be based on the condition of the plane and not a wholesale condemnation of any certain types.

CLARENCE O. PREST,
Arlington, Calif.

State Law—if Any

My opinion is that every pilot should be licensed, and yet it is almost impossible for a fellow who is interested in aviation to get a training for a pilot's license.

I am an Austrian, born in Vienna, and during the War was with the Albatross Airplane Co. After coming to New York, I tried to obtain a license but was unable to do so as the amount asked for training was too much for me to pay. I think the Government or states should establish service stations where everybody might have the opportunity to secure a certificate.

I think there is no better plane for commercial use than a monoplane. I am building one myself and will have it ready late in the fall for commercial use.

I think that the new law will do more harm than good, and aircraft legislation should be controlled by the states.

CHARLES LUKAS,
New York City, N.Y.

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The Scadta and Central America

To the Editor, AVIATION:

It is with great interest that I have read your review of the activities of the Scadta Air Transportation Company in the issue of December 28, 1925 of your important magazine.

As manager of the Scadta company, I would like to express my thanks for the interest your magazine has dedicated to our efforts in developing commercial aviation in Columbia. In about two or three weeks, I hope to be ready to give you complete information on the performances of the Colombian Air Transport Company. This information will include exact statistics covering the twelve months of 1925. At present, I should like to limit my communication to rectifying a few statements in the above mentioned article.

The Scadta company does not use, on its Junkers monoplanes, 300 hp. Hispano-Suiza engines, but only 185 hp. B. M.W. (Bayriche Motorenwerke A•G.) engines, and with these, the planes are able to carry a pay load of 700 lbs., exclusive of a crew of two and gasoline for 3½ hours.

The tested performance of the Dornier Wal type is a pay load of 3,250 lbs., exclusive of a crew of four and gasoline for four hours.

On the 15th day of July, 1925, the Scadta planes had covered a total of one million kilometers.

The average earnings per plane per month have been very much exaggerated in your article. The company has been in continuous operation for four years, and for the last three years has been paying dividends to its shareholders. Besides covering amortization and depreciation charges, a 5% dividend on the capital stock was paid for the last six months of 1924, and the same amount for the first six months of 1925.

The Scadta company is a national Columbian company. It has no intention of extending its operation to or through Central America.

Neither the Scadta nor the Condor Syndicate has any exclusive concession in Central or South America, nor has either of them tried to acquire any exclusive concession.

The reason why the Scadta company has sometimes been confused with the Condor Syndicate is, I think, the fact that I am General Manager of the Scadta and that I was elected to represent the Condor Syndicate in making the Central American flight and in presenting the results of that flight and the general plan to American interests in New York.

As to the Condor Syndicate, that is a promotion organization, which has planned an air transport line between Key West and the Canal Zone, by way of Havana and Central America, and actually made a trial flight over the route with two Dornier Wal seaplanes during August and September of last year. The purpose of this flight and the object of the Condor Syndicate in making it was to provide the necessary technical operating and organization data to secure the financing of an American owned and operated air transport line from Florida to the Canal Zone. You will thus see that the Condor Syndicate is not in any sense a holding company since it owns nothing, not even an interest in the Scadta company. Its only purpose and its only property is the work it has done in planning, organizing and testing the Florida-Panama route, which can become an operating company only when the necessary capital is furnished by American interests. I might add that I have every reason to believe that an American owned and operated company will be established within the next few weeks and will take over all the concessions, plans and work which the Condor Syndicate has done in connection with the Florida-Panama route, including, of course, the two Dornier Wal seaplanes which have made the flight over that route.

The moment that such an American company comes into existence and acquires the plans of the Condor Syndicate and its two seaplanes, the Condor Syndicate goes out of existence.

DR. P. P. v. BAUER,
Manager, Sociedad Colombo-Alemana de Transportes Aereos.

The Aeroplane

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What is Useful Load?

To the Editor, AVIATION:

In the Dec. 7, issue of AVIATION we read with interest the article on "Pay, Total, Minimum or Contest Load", inasmuch as any set of Ford Tour results has been considered pleasant and worthwhile reading to any of us connected with Travel Air, no matter how remotely. The general point raised is one which will certainly bear a considerably greater airing and discussion than it has had even since your article.

For example, if we accept the N.A.A. discussion of ruling out what is necessary for flight, what is the definition of necessary? No doubt every pilot in the tour carried a set of tools and some spare parts. Are these pay load because not necessary for flight, are they useful load, or are they standard equipment and as necessary for completing the tour as any other part of the airplane? Are Mr. Fokker's three mechanics, one wheel, one propeller, blocks, ladder, covers, stand, chair, funnel, pail, etc., pay load, useful load, or what is necessary for a large three engine ship to undertake a tour of considerable size, and, hence, part of the equipment? I am, understand, not attempting to be flippant, three motored planes of the excellent flying qualities of Mr. Fokker's are as desirable for the future safe development of commercial aviation as are steel tube fuselages, but if such planes require three mechanics, ladder, pail, blocks, etc., why should they be figured pay load and if they are a fixed need for extended tours, why should such planes be allowed to count as useful load what smaller planes can do without.

Not of course that we would mind having used, what Mr. Noorduyn calls useful load, in the published results as such. Take for example our C6 entry. On each take-off Mr. Plank, journalist, furnished 175 lb., and baggage ballast and tools completed the 285.5 lb. required under the contest rules. In addition to this 57 gal. of gasoline added 336 lb.; ten gal. of oil, 80 lb., and Mr. Beech the pilot, 160 lb., making a useful load, by this definition, of 862.5 lb.; an excess of 576 lb., or approximately 201 per cent, over that required. Mr. Noorduyn, in his most all-embracing mood, claims an excess of 1799 lb. or a mere 167 per cent.

The moral of all this seems to be "Let us juggle the Ford Tour figures, but let us juggle them thoroughly. Let us wrangle and argue between ourselves but let us all have a chance at it." Few of us have complete figures on the other man's ship. Maybe some day, manufacturers, operators, public, editors, speed, and efficiency people will all be satisfied with an air contest, but I doubt it.

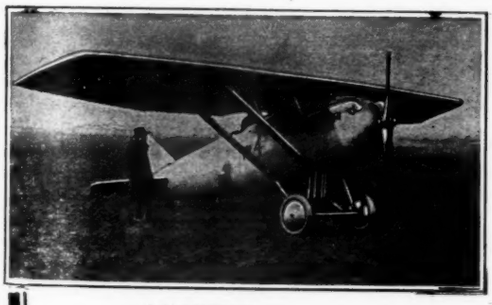
D. C. SAYRE,
Travel Air Manufacturing Co., Inc.

Aeronautical Meteorology

"AERONAUTICAL METEOROLOGY" by Willis R. Gregg, U. S. Weather Bureau. Ronald Press, New York City, N. Y.

One of the most interesting of all subjects to fliers is the question of the weather. Many fliers have a way of sizing up local conditions but, with the increasing amount of cross country flying that is being done, more than a local forecast is necessary. A study of weather conditions is not only valuable to fliers but is also a subject of fascinating interest. A new book, entitled "Aeronautical Meteorology", by Willis R. Gregg of the U.S. Weather Bureau, published by the Ronald Press, presents the subject in simple but most interesting fashion. The book is written especially for aviators and takes up those matters which are of special concern to fliers.

The book is well illustrated, not only with photographs of clouds, but with charts illustrating the principles of weather forecasting. The book takes up, in easily understandable terms, the general mechanics of the atmosphere and explains what causes winds, clouds and rain. It then proceeds to take up the principles of weather forecasting, explaining the methods of the government bureau and then giving specific details which will help the flier who wishes more detailed information. The book is very readable and should be studied by all those who wish to increase their knowledge of aeronautical subjects.



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because you are not a regular subscriber, may contain the article, news story, picture or advertisement which you could have used with profit.

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AIRPORTS AND AIRWAYS

Salt Lake City News

By Lester F. Bishop

Salt Lake City is the proud owner of a fine municipal airport which is located about four miles west of the "Mormon" Temple Block, this temple building being readily seen from the air.

The U. S. Air Mail conducts its flying from this field. This field is also equipped for night flying, being lighted by a 36 in. General Electric flood light, rated at 500,000,000 candle power. There is also a 24 in. rotary beacon on top of the Air Mail hangar. Also, there are numerous danger boundary lights on the East and South sides of the field to warn pilots of a 44,000 volt high tension line which is placed on seventy foot steel towers. This high tension line runs North and South on the East boundary of the field. Located near the 36 in. beacon is an 18 in. beacon which enables pilots to see these 70 ft. high tension towers.

The Western Division of the Air Mail Service has had some fog recently. This fog called on Salt Lake for a week and then migrated to Reno, Nev., and hung around there for a week, but all in all we have been blessed with wonderful weather up until this time and our local weather man, J. Cecil Alter, says it will continue for some time and that the people who wish to do some ice skating will be somewhat disappointed for some time to come.

The 104th Division, Army Air Service Reserve, has a large metal hangar on this field which will accommodate about eight DH4's. Capt. A. F. Harold is officer-in-charge. They have flown many hundred hours here without any accidents.

There is also located on this municipal field one commercial hangar, the owner of which is none other than "Tommy" Thompson, the foremost successful exhibition flier of the inter-mountain country.

The writer, during a visit in Elko, Nev., for a few days the last week of December, on account of a heavy fog in Reno, witnessed, while there, Chief Pilot Chuddeback and mechanic of the Walter T. Varney Aircraft Co. assembling a new Swallow plane and make flight tests. The Swallow is a very neat and trim plane and performs splendidly. Pilot Chuddeback made a test flight with 370 lbs. of sand. The plane took off in eight seconds although the engine was not functioning properly. The landing speed of the Swallow is very slow. I estimated the speed at 35 m.p. h. in calm air at 5500 ft. above sea level. After the tests were completed, the Swallow was dismantled, crated and shipped to the Varney field near San Francisco, where a few changes and further tests are to be made.

Wichita, Kan.

By Walter H. Beech

The Wichita Municipal Field is enjoying an unusual amount of activity. The Travel Air Company is building four more hangars in addition to two already installed. There are also three privately owned hangars on the field at the present time.

Mr. Carl Winstead has arranged with the city authorities to establish a first class repair depot. A building for this

ALL METAL

Planes and Parts

LOADS sustained by aircraft structures under the various possible conditions of flight and landing are somewhat complex and usually tedious to analyze completely. Many cases of loading comprise the simultaneous application to a given member of bending load and end load in a constant proportion. In all such cases a suitable design will ensure that the part is *straight under maximum loading*. This has enabled a given weight of structure to carry twice as much load as it could under the usual practice of "Rule of Thumb."

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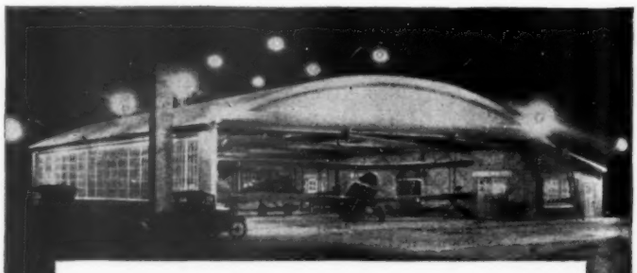

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purpose is also being equipped. This business will be known as the Winstead Brothers Air Repair Depot, Post Office address, 535 West Douglas Ave., Wichita, Kans.

There has been a great deal of flying activity in the last two weeks and especial credit should be given Mr. D. A. Askaw, Travel Air pilot, who left in a heavy snowstorm which almost obliviated vision. Mr. Askaw is one of the old school pilots, and believes that, when you are ready to go, start, let the weather happen what may.

Three ships were delivered last week to the Boston Air Port Corporation by the Travel Air Company, while two were delivered to Mr. Carl Lyle, Venice, Calif.

Mr. Aylea is bouncing his Swallow around over the field, and he says he will learn to fly no matter how long it takes. Mr. Aylea is an aviation enthusiast, and his principal business is running a first class machine shop and general engineering work in Wichita.

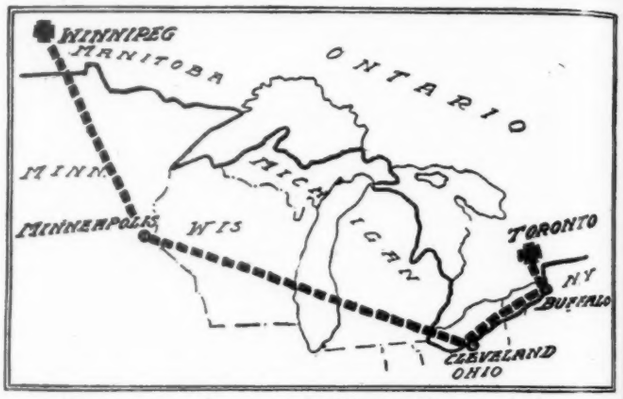
The contract for the hangars of the N.A.T., for the use of the air mail planes, has been let and the work will be started on this building immediately. Wichita is becoming more and more a popular air center, and every one is thankful to the Wichita authorities for furnishing such a wonderful field for the building up of aviation.

Florida—Panama Air Service

A twin-engine Dornier 'Wal' flying boat with seating capacity for ten passengers, arrived at Miami, Fla., on Jan. 7, on its way to Palm Beach. The plane was of German registry and piloted by Baron Fritz von Buddenbrock. The plane is owned by the Condor Syndicate a promotion company which plans to start an air line between Florida and Panama Canal. Dr. P. P. von Bauer, who represents the Condor Syndicate, hopes to have an American company organized to take over the Condor Syndicate within a few weeks. The northern terminal of the air line will be West Palm Beach. Dr. v. Bauer is also the general manager of the Scadta air line which operates in Columbia and is perhaps the only air line which has made a financial profit by regular operation of mail, freight and passenger air services over a considerable period of years.

Winnipeg and Toronto to Have Air Service

There is a probability of a commercial air transport service being inaugurated early next spring to connect Winnipeg and Toronto in Canada. The service, which will cover the major portion of its route over United States territory, will provide

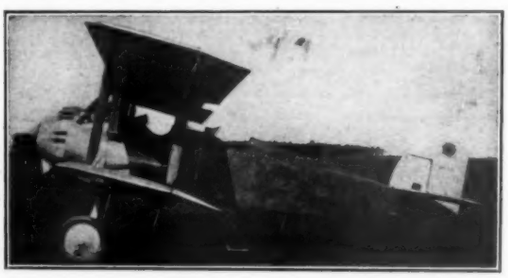


The route of the proposed Winnipeg-Toronto air line

a 13-hour run from Winnipeg to Toronto via Minneapolis, Cleveland and Buffalo and will handle passenger and express business. The accompanying map shows the proposed route.

Nashville to Aid Aviation

Less than twelve hours after three of the Ford-Stout airplanes, en route from Detroit to Florida, were wrecked at



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BUFFALO, N. Y.

Blackwoods Field, Nashville, Tenn., on Dec. 31, 1925, largely on account of the small size and uneven surface of the field, the City Council of Nashville voted $35,000 toward the purchase of a new aviation field on the east bank of the Cumberland River, in East Nashville.

The County Court is expected to vote a similar appropriation shortly.

The field was recommended by officers of the 105th Observation Squadron, Tennessee National Guard, as being essential to the development of aviation in Tennessee.

Chicago, Ill.

By O. Klein

Walter W. Meyer has bought back his Liberty 6 Standard from Jack Henderson and has flown it to Morton Grove.

The Heath Airplane company has begun the New Year with lots of activity. Seven new students were enrolled during the first week of January and the shop is undoubtedly one of the busiest in the city. Flying instruction is being given almost every day.

Ford to Start Air Mail

Air mail service between Cleveland and Detroit is to begin on Feb. 1, under a contract signed by Henry Ford, Cleveland air mail officials announced on Jan. 7.

This route, and one from Detroit to Chicago to be opened on the same date, will be the first to operate on a contract basis.

Schedules call for ninety miles an hour as the average flying time between Detroit and Cleveland.

Planes now making daily trips with Ford correspondence and freight will carry the mail, their schedules being moved up so that Detroit air mail may connect with Chicago and New York planes.

Jacksonville, Ill.

The Hudson Auto and Aero Co. have added a complete flying school to their airplane business and had fifteen students enrolled at the beginning of December. The city has provided a landing field East of the city and the company has built a hangar on it along with an office building. They have, as chief test pilot and instructor, C. W. Parkhurst of Buffalo, N. Y.

British Buy Airdrome

The Hendon Airdrome, a tract of 350 acres, has been bought by the Government from Claude Grahame White, a pioneer in British aviation.

It is said that more than $2,500,000 was paid for the property. It will be used as a home defense station, as it is one of the chain of such stations stretching from the vicinity of London westward to Salisbury plain.

Eckener Postpones Polar Zeppelin

Dr. Hugo Eckener, who captained the Los Angeles on the occasion of her delivery by Germany to the United States, has postponed his attempt to raise funds by popular subscription for building a super-Zeppelin for North Pole explorations. As a reason for the postponement Dr. Eckener states that Germany's acute financial and economic situation does not warrant continuance of his efforts, which, so far, have raised only $300,000 out of $4,000,000 needed.

Saw 12 Beacons at Once

Air mail pilots reported that the night of Jan. 7 was one of the most remarkable for long-distance visibility they had ever experienced on the New York-Chicago air route.

Pilot L. T. Bertaud, carrying the night air mail from New York to Cleveland, said that from the time he left Hadley Field, N.J., until he descended at the Bellefonte Field, just before midnight, he could see a revolving beacon in Philadelphia, probably the B.B.T. searchlight on the Atlantic Building, and before landing at Bellefonte the city lights in Altoona, Johnstown and Pittsburgh were plainly visible. Twelve of the air mail beacon lights were in view at one time.

Bertaud flew at a height of approximately 4,000 ft. The airline distance between Philadelphia and Bellefonte is about 150 miles.

PUBLISHER'S NEWS LETTER

In full accord with the fears expressed in AVIATION regarding regulation of aeronautics by the government, a letter, by Lieut. Comdr. J. M. Kenworthy, published in a London newspaper, puts the British situation succinctly. Under the two-column heading, "Scandal of British Aviation," and a sub-head, "Remove the Stranglehold Restrictions," Lieut. Comdr. Kenworthy shows the dangers of over-regulation. Such control of aeronautics in this country is unthinkable. The Bingham Bill expressly provides that this will be avoided by emphasizing the necessity of promoting civil aviation. This letter is reprinted at this time, not to harm the movement for regulation but to urge caution after civil aeronautics legislation has become a law, and to prevent the establishment of a petty bureaucracy that may endanger commercial aviation. The letter follows:

> The British are the best aeroplane pilots in the world. We are an adventurous, pioneering, sporting people, and if we were permitted could lead mankind in the popularising of private flying.
>
> Air power will be of immense importance in the future, and not only for military purposes. It has great commercial possibilities, and no one can set a limit to its utility. It has been well said that transport is the first need of civilisation. And air travel will presently be the cheapest and most rapid means of transport. The great peoples of the future must have an air sense, just as the great peoples of the past had and to-day have a sea sense. *Yet civil aviation drags painfully in England, and may soon cease altogether.*
>
> Apart from the light aeroplane clubs, which are sadly hampered at the present time by bureaucratic restrictions, as I shall presently show, only four private persons in Britain have their own aeroplanes and attempt to fly them. Four only! We have hundreds of young men of means in the country who qualified as pilots during the war, and hundreds of others who would take up flying if allowed to do so.
>
> Contrast America. At a recent aeroplane race meeting in the United States over 100 persons arrived in their own private aeroplanes, parked them as one parks a motor-car at Ascot, attended the races, had lunch, lost or won money on the results, and then flew away home in their machines.
>
> The number of persons owning aeroplanes and regularly flying them in the States will soon be over a thousand. Accidents are few, and the mortality is less per cent. than among the motoring public in North America.
>
> But the adventurous Briton who wishes to own an aeroplane and fly for his own pleasure or advantage is driven from pillar to post, hampered, irritated and restricted by a horde of officials who remain over from the very elaborate control established during the war, and who make all kinds of regulations and rules for the purpose of justifying their otherwise useless existence.
>
> Let me give an example. Every private airman must carry with him the following books and documents, which must be kept up to date from day to day:—
>
> The aeroplane log; the engine log; the certificate of air register; the certificate of air worthiness; the journey log-book.
>
> Suppose our flying gentleman wishes to go out on a fine day and, having flown a couple of hours, comes down for lunch. The nearest policeman is empowered to demand the production of all these books and documents, to examine them, and if he considers them not in order to forbid the airman to proceed any further.
>
> Suppose, furthermore, he desires to visit a friend in Yorkshire, starting from London to stay the night and to return to his business the next day, perhaps over the week-end. Arrived at his friend's house, he folds the wings of his machine and places it in a barn or in the open under a tarpaulin. Before he can leave the next morning, his own ground engineer, whom he has to maintain by regulations, must examine the machine and sign the engine log-book before the aeroplane can start. So, unless he carries his engine mechanic with him, that person will have to travel by train to wherever the aeroplane is staying for the night.
>
> Since the days when every mechanically propelled vehicle had to be preceded by a man carrying a red flag there has been no such example of hampering, useless and unnecessary restriction on the lawful proceedings of the King's subjects.
>
> *And remember that the risk from aeroplane accidents, apart from danger to the airman, whose own business it is, is much less to the general public than from motor-cars.*
>
> But there are worse difficulties than this. For example, a young man leaving the university and wishing to take up flying as a hobby, must have a license. Before he is granted this license he must pass the stiffest medical examination in the world, which takes three hours. He must present himself for re-examination every six months, and has to pay the requisite fees on all occasions.

PUBLISHER'S NEWS LETTER—Continued

He then has to pass an examination in aerodynamics, aero-mechanics, aerial navigation, meteorology, and international law as applied to aviation.

The greater part of this is absolutely unnecessary. The rules and regulations are modelled on those for ensuring safe navigation and preventing collisions at sea, principally by night or in a fog. No one would think of flying at night or in a fog for pleasure, and complicated rules regarding laws and signals by night or in a fog are obviously unnecessary.

Let me give some of the questions set in the examination papers:—"What is an isobar and to what is it analogous?" "Give some account of the mode of formation of hail"; "Explain the formation of fog at sea, taking, as example, the fogs off the Newfoundland Banks."

Other questions are:—

"If a flying machine or airship is on the surface of the water and is not under control, what light or lights should such craft exhibit, what should their position be with reference to each other, and at what distance should they be visible?"

"Do you know of any other cases in which an aircraft should carry red lights similar to those exhibited by a flying machine or airship on the surface of the water and not under control?"

"Should you see three lights disposed vertically one above the other, the lowest and highest of these lights being red, and the centre one white, what action would you take with regard to the aircraft displaying them, and what type of aircraft would it be?"

"State what you understand by the following terms:—Oblate spheriod, poles of the earth, rhumb line, great circle, small circle, equator, parallel of latitude, meridian, latitude, longitude, true course, magnetic course, compass course, drift angle, track."

Most of this knowledge is only possessed by ocean navigators capable of taking a master's certificate, and such knowledge is a life study in itself. And periodical examinations have to be passed. All this rigmarole and all these formalities have to be gone through before the "B" pilot certificate can be taken out; and a "B" pilot certificate is necessary if an aviator wishes to take a passenger, friend, relation or whoever it is, on board.

Apart from the tyranny of a bureaucracy which must justify its existence, the mistake has been made of attempting to copy the regulations, devised after centuries by the Board of Trade and Admiralty for the control of shipping and the safety of people at sea.

If we are to take our place in the world of flight, these puerile and ridiculous regulations and restrictions must be swept away altogether and encouragement given to young men wishing to take up flying, even if it means the sacking of a few dozen useless and superfluous officials.

J. M. KENWORTHY.

* * * *

There is one feature concerning air transport about which everyone is in agreement. In place of direct subsidies, it is expected that the government will provide the aerial facilities required for aerial routes. Congressman Harry B. Hawes has compiled some interesting totals concerning indirect aid to other forms of transportation. He finds "a private investment of approximately $20,000,000,000 in railroads; a national investment of $1,150,000,000 in waterways (this does not include the immense investment in steamboat and steamship lines). In highways and motor transportation we find a national investment—in highways of approximately $1,500,000,000 and a private investment in motor vehicles of approximately $14,400,000,000." With such stupendous figures invested both privately and by the government for other transportation facilities, the precedent is well established. It only remains for those interested in air transport to present a practical plan for governmental encouragement and it will undoubtedly be forthcoming.

* * * *

Much has been written concerning aircraft accidents. The Department of Commerce has compiled the figures for street and highway accidents and finds that in 1923, the last year for which the figures have been completed, there were 22,600 fatalities and 678,000 serious personal injuries. Eighty-five per cent of these were incident to automobile traffic. The economic loss is estimated to be not less than $600,000,000 annually. The reports lays the responsibility primarily on the public authorities—Federal, state and local. Each group is charged with its own particular responsibilities. If the recommendations that have been made to correct this condition are examined by those who are interested in aircraft regulation, it will be found that street and highway laws have not prevented accidents. The proposal is made to have further conferences in Washington to spread information. The demand for further legislation is not heard. An aircraft conference held under similar auspices might be a more practical solution than strict regulation.—L.D.G.

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